CS-759
Check Off
BS
JM
RH

Final Report

SERDP: Advanced Biotelemetry for Resource Management on Military Lands (CS-759)

William S. Seegar, Ph.D.
U.S. Army Edgewood Research, Development, and Engineering Center
SCBRD-RTL
Aberdeen Proving Ground, MD 21010

Mark R. Fuller, Ph.D.
Department of Interior
Raptor Research and Technical Assistance Center
970 Lusk Street
Boise, ID 83706

Center for Conservation Research & Technology
University of Maryland Baltimore County
Room 105 TRC Building
5200 Westland Blvd.
Baltimore, MD 21227

Submitted to:
Office of the Strategic Environmental Research and Development Program
901 North Stuart Street, Suite 303
Arlington, VA 22203

Submitted in Fulfillment of the
SERDP project #759

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 074-0188

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	1999	Final Report

4. TITLE AND SUBTITLE
SERDP: Advanced Biotelemetry for Resource Management on Military Lands (CS-759)

5. FUNDING NUMBERS
N/A

6. AUTHOR(S)
William S. Seegar and Mark R. Fuller

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
Center for Conservation Research & echnology, University of Maryland Baltimore County.

8. PERFORMING ORGANIZATION REPORT NUMBER
N/A

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)
SERDP
901 North Stuart St. Suite 303
Arlington, VA 22203

10. SPONSORING / MONITORING AGENCY REPORT NUMBER
N/A

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION / AVAILABILITY STATEMENT
Approved for public release: distribution is unlimited.

12b. DISTRIBUTION CODE
A

13. ABSTRACT *(Maximum 200 Words)*

The process of natural resource management and planning begins with a thorough inventory and description of a natural system's flora and fauna. This information is critical for the development and implementation of effective integrated natural resource management plans. Such plans, in turn, allow land managers, such as the U.S. Department of Defense, to maintain biodiversity, conserve natural resources, and comply with applicable environmental laws and regulations in concert with mission requirements. Advanced biotelemetry capabilities that incorporate the latest innovations in microelectronics, GIS, remote sensing, and computer modeling offer great promise in helping to define and characterize human effects on species and ecological communities and to identify strategies to ensure their sustainability in the face of expanding human enterprise.

14. SUBJECT TERMS
SERDP, biotelemetry, biodiversity, natural resource management, wildlife

15. NUMBER OF PAGES
172

16. PRICE CODE
N/A

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
unclass	unclass	unclass	UL

Final Report

SERDP: Advanced Biotelemetry for Resource Management on Military Lands (CS-759)

William S. Seegar, Ph.D.
U.S. Army Edgewood Research, Development, and Engineering Center
SCBRD-RTL
Aberdeen Proving Ground, MD 21010

Mark R. Fuller, Ph.D.
Department of Interior
Raptor Research and Technical Assistance Center
970 Lusk Street
Boise, ID 83706

Center for Conservation Research & Technology
University of Maryland Baltimore County
Room 105 TRC Building
5200 Westland Blvd.
Baltimore, MD 21227
www.ccrt.org

SERDP project #759, "Advanced Biotelemetry Technology for Resource Management on Military Lands," FINAL REPORT.

CONTENTS

CCRT FINAL FY1994-1998 SERDP REPORT

SERDP: Advanced Biotelemetry for Resource Management on Military Lands (CS-759)

William S. Seegar, Ph.D.
U.S. Army Edgewood Research, Development, and Engineering Center
SCBRD-RTL
Aberdeen Proving Ground, MD 21010

Mark R. Fuller, Ph.D.
Department of Interior
Raptor Research and Technical Assistance Center
970 Lusk Street
Boise, ID 83706

Center for Conservation Research & Technology
University of Maryland Baltimore County
Room 105 TRC Building
5200 Westland Blvd.
Baltimore, MD 21227
www.ccrt.org

The purpose of this project has been to develop, test, and demonstrate new biotelemetry technology and methods that will provide useful information about natural resources management and that can reduce the interference to military training that is caused by traditional field data gathering methods. The technologies described in this volume can simultaneously enhance military readiness and compliance with natural resources management policies.

The central feature of the project is the integration of wildlife radio-tracking via the Argos-Tiros satellite system with natural resources survey and mapping in geographic information systems. The studies conducted in conjunction with this project were demonstrations only, not rigorous scientific investigations. The resulting data should be treated as such. However, this SERDP project has proven the utility of remote, satellite-based data gathering technologies and methods for military natural resources conservation and management.

Throughout this report are references to Service Argos Location Classes (LC). These refer to the relative accuracy of the estimated locations (latitude and longitude) derived from the Argos system. Service Argos classifies its location estimates according to the following scheme:

Location Class (LC)

Class	Estimated Accuracy in Latitude and Longitude
3	<= 150 meters
2	<= 350 meters
1	<= 1000 meters
0	> 1000 meters
A and B	no estimate of location accuracy
Z	invalid location

SERDP: Advanced Biotelemetry for Resource Management on Military Lands (CS-759)

BIOTELEMETRY BACKGROUND: Conventional biotelemetry systems, developed in the 1950s and 1960s, use directional receiving antennas to locate radio transmitters. Such systems have enabled field biologists to relocate previously captured and radio-tagged animals to study their natural history. Conventional biotelemetry systems, however, are typically restricted to small geographic areas accessed on foot, from automobiles, or by aircraft. Moreover, these systems generally require several personnel in the field at the same time in order to triangulate the location of the radio-tagged subject animal.

SATELLITE BIOTELEMETRY BACKGROUND: In 1981, the U.S. Army Edgewood Research Development and Engineering Center (ERDEC) recognized the shortfalls of conventional radio-transmitter biotelemetry systems and initiated a program with the Johns Hopkins University Applied Physics Laboratory (JHUAPL) to investigate the potential of developing small platform transmitter terminals (PTTs) to be mounted on animals and tracked via satellites. The program was designed to provide a capability that could track migratory birds and other widely ranging wildlife species anywhere on Earth. A miniature, satellite-received transmitter that is light enough to be carried on the backs of birds was first developed in the mid–1980s. The transmitters, or PTTs, are located and tracked by the French-U.S., Argos satellite system, which is capable of tracking mobile organisms anywhere on the face of the Earth with an accuracy of $\pm$ 150 meters out to 3 km (depending on the angle of the satellite and the quality of the PTT transmission). Since the inception of the program, miniaturization has led to the commercialization and fielding of transmitters that can weigh less than 20 gm and can interface with an array of sensors. From the beginning, use of radio tagging has always been based on careful consideration of the effects of the transmitters on animal behavior and bird flight.

BEGINNING IN FY94, the Defense Department's Legacy Resource Management Program (Legacy) and Strategic Environmental Research and Development Program (SERDP) funded related projects (1) to demonstrate recently developed, satellite-based biotelemetry technologies on military bases (Legacy), and (2) to develop new capabilities to enhance existing systems (SERDP). These projects were planned and executed in parallel. The overall purpose of the joint Legacy/SERDP effort has been to develop, demonstrate, promote, and improve satellite tracking and remote monitoring systems for resource management and conservation on military lands. The four 1996 Legacy field demonstrations (described in the Final Legacy report), along with our Partners in Flight activities, have produced extremely comprehensive tracking and monitoring databases for the target organisms. We incorporate this tracking and monitoring information into geographic information systems (GIS) to map animal movements in relation to habitat types, geo-political boundaries, vegetation cover, geomorphology, water resources, military land use activities, and many other geographically discrete data sets. In this way, we are providing valuable (and often previously unattainable) resource management information to military land managers. This system can also support near real-time monitoring and analysis of animal movements and behavior in relation to military land use activities to enhance research of cause and effect relationships between military activities and wildlife ecology.

THROUGH SUPPORT FROM LEGACY, we demonstrated commercially available satellite platform transmitter terminals (PTTs) on the four military bases mentioned below. We also applied numerous PTTs to certain migratory bird species throughout North America.

- Dugway Proving Ground (DPG), Utah encompasses 1,300 square miles southwest of Salt Lake City. DPG houses the U.S. Army Research, Development, Test, and Evaluation (RDT&E) Command's Chemical, Biological, and Radiological Weapons School, as well as a U.S. Air Force Flight Test Center. DPG activities include the testing of chemical agents, pathogens, and toxins, now conducted in sealed containment chambers (rather than open air testing as in the past). Other activities at DPG include Army Reserve and National Guard component maneuver training. We successfully tracked and monitored via satellite Pronghorn (a big game species) and wild Horses. Military land managers must provide habitat for and minimize environmental disturbance on these species. Our systems provided information about the movements of these animals remotely, without impacting military activities. Otherwise, the same data would have to be gleaned from field studies on foot, from trucks, or from low-flying aircraft (which would require a high level of coordination with military activities). We also satellite tracked several Ferruginous and Swainson's Hawks in the vicinity of DPG to assess potential effects from military activities.

- Naval Air Station Fallon (NASF), Nevada is centrally located among highly productive wetland and lake habitats that include Walker Lake, Stillwater National Wildlife Refuge, Pyramid Lake, and the Lahontan Reservoir. NASF houses the naval fighter weapons school (TOPGUN), the carrier airborne early warning weapons school, and is the only naval facility providing advanced integrated carrier air wing strike training. NASF also hosts realistic electronic warfare flight training, air to ground and air to air weapons delivery, special weapons delivery, and enemy evasion tactics. Aircraft stationed at NASF include F/A–18, F–14, A–6, F–5, and helicopters. Military aircraft from the Navy, Air Force, Marine Corps, and Nevada Air National Guard train at NASF. We successfully tracked and monitored via satellite 7 White Pelicans in the vicinity of the NASF and its associated training ranges. These wetland habitats surrounding the air station and military operating areas harbor large populations of White Pelicans and other bird species that **pose a significant threat of bird-aircraft collisions.** Altitude information derived from miniature pressure transducers on the PTTs was gathered and used in a single dimension soaring model to predict pelican flight time, location, and altitude to help predict times of high flight in relation to military aircraft travel.

- The Idaho Army National Guard Orchard Training Area (OTA), Idaho is centrally located within the 758,000 acre Snake River Birds of Prey National Conservation Area (SRBOPNCA). The OTA houses an Air National Guard A–10 Air Wing and is currently the third largest National Guard training facility in the U.S. The OTA hosts regular armored vehicle training, live fire and laser training with M1–Abrams tanks, and combined tank and helicopter maneuvers with live fire. During the summer months, the OTA serves as the Annual Training Site for the Idaho, Montana, and Oregon Army National Guard units that constitute the 116th CAV BDE, as well as other units from

around the country. During the winter, most activity is concentrated in the northern portions of the OTA, where year-round schools are conducted by the Combat Vehicle Transition Training Team for National Guard Units from all over the country. The Idaho Army National Guard is directed by Congress to manage for the protection of one of the densest population of raptors in the U.S. in the SRBOPNCA. We successfully demonstrated simultaneous tracking of golden eagles and military vehicles as a method to study possible training effects on animal movements. Ferruginous Hawks (sensitive species designation) were also tracked via satellite in conjunction with the Deployable-Force-on-Force Instrumented Range System (DFIRST) to demonstrate the feasibility of integrating automated military tracking systems with natural resource management technology. We also tracked four Swainson's Hawks via satellite from the OTA as part of a larger, transcontinental migration study in conjunction with Partners in Flight.

- White Sands Missile Range (WSMR), New Mexico is the military's largest all-overland test range in the Western hemisphere. Within WSMR are the San Andres National Wildlife Refuge, White Sands National Monument (National Park Service), and Joranda Experimental Range (U.S. Department of Agriculture and U.S. Forest Service). WSMR houses the U.S. Army Research, Development, Test, and Evaluation (RDT&E) Command for weapons and space systems, and components. Between 1945 and 1989, a total of 38,029 missile firings were completed at WSMR, including the world's first atomic explosion at the Trinity site on July 16, 1945. We successfully tracked and monitored Oryx (an introduced African antelope) via satellite on the WSMR to help military land managers comply with National Park Service and New Mexico Game and Fish requirements for managing this exotic species. Management of this species has proven to be difficult for military land managers because of the Oryx's preference for remote, rugged terrain. In addition, Oryx habits on WSMR raise concerns of its potential effects on adjacent natural systems off-base. Continuing work on Oryx will employ the new, SERDP developed GPS PTTs to track these animals to an accuracy of ±100 meters throughout the 2+ million acre WSMR installation.

- In conjunction with Partners in Flight, we successfully developed a methodology and study protocol for application of satellite tracking to Tundra Peregrine Falcons (*Falco peregrinus tundrius*, a formerly threatened neotropical migrant) and Swainson's Hawks (*Buteo swainsoni,* declining population) using the smallest available transmitters (20 gm) that interface with the Argos satellites. Peregrines frequent military bases across North America, while Swainson's Hawks inhabit military lands throughout the western U.S. and Canada. In fact, we pioneered the application of space-based technology for the study of Neotropical migratory birds.

    1. In conjunction with Partners in Flight, we have applied dozens of commercially available 27gm and 20gm platform transmitter terminals (PTTs) since the autumn of 1993 to migrating Tundra Peregrine Falcons along the coasts of Maryland and Virginia and the gulf coast of Texas. PTTs were also applied in Peregrine breeding areas of Greenland and Eastern Canada. In only a few years, these transmitters, tracked via the Argos System, have provided more data on Peregrine Falcon migratory patterns than the past 25 years of conventional field

studies and leg band returns. We are now learning exactly where these birds travel, where they stop along their trek, and what threats may exist to their survival along the way. This research continues a tradition of DoD contributions to the recovery of endangered species, and in the case of peregrines, a wide-ranging species that occurs on military lands and training areas across the continent. Results of this work have appeared in scientific publications and have been featured in radio and television news programs. This coverage and interest reveals the power of these advanced technology applications to collect valuable information on a globally distributed, transcontinental migrant. Our work with the Tundra Peregrine Falcon is continuing to assist in the identification of key migratory and Neotropical habitat to support a wide variety of avian species common to both North and South America. This information will enable conservationists to identify key migratory and wintering habitats and to monitor these areas for the conservation of avian biodiversity.

2. Also in conjunction with Partners in Flight, our DoD sponsored Legacy project contributed significantly to radio-tracking of Swainson's Hawks (SWHA) with satellite-based technology during 1995 and 1996. We monitored their distribution on and off military installations in the western U.S., where their numbers had been diminishing at an alarming rate for unknown reasons. The Swainson's Hawk is listed as a species of concern by five states and the Bureau of Land Management, and as a special emphasis species by the U.S. Forest Service. Nesting population declines had been reported over much of the hawks' range, including Dugway Proving Grounds. With no obvious reason for this decline, scientists postulated that problems along migration routes or on wintering areas were responsible. SWHAs were marked with PTTs near the Idaho Army National Guard Orchard Training Area, Dugway Proving Ground, near Navy land holdings in Oregon, and the Rocky Mountain Arsenal (now a Fish and Wildlife Service refuge) in Colorado, as well as several provinces in Canada. The locations of these hawks were monitored on their North American breeding grounds, Argentinean wintering grounds, and along migration routes. In January of 1996, scientists visited different areas indicated by the satellite derived location data. They counted over 4,000 dead SWHA, killed as an apparent side effect of pesticide applications to croplands, and they believed the actual mortality numbers may have exceeded 20,000. Since adults represented nearly 90% of the dead birds and the entire Canadian SWHA population is estimated between 20–40,000 pairs, this loss represented a serious threat to the survival of the species. It turned out that this catastrophic population decline resulted from the use of a toxic organophosphate pesticide, recently brought into use on the pampas of Argentina where these hawks winter in communal roosts. Through the use of remote tracking and monitoring technology, this environmental problem was identified and, within 18 months, remedied through collaborative government and private sector management and education. Keeping this raptor off the endangered species list probably saved millions of federal dollars by avoiding costly large-scale research and recovery programs and related habitat management activities in North America. This

application of wildlife tracking via satellite is a perfect demonstration of the unique advantage this technology can provide in the study of a wide-ranging species.

THROUGH SUPPORT FROM SERDP, we have developed a Global Positioning System (GPS) PTT, new meteorological sensors, as well as an acoustic sensor that is small enough to be integrated into a PTT to perform a variety of functions. As a result, a new, more capable generation of satellite tracked PTTs is now available for deployment. Advanced sensors in new PTTs include a digital audio capture system (an acoustic sensor with pattern recognition software) and sensors to provide temperature, absolute vapor pressure (humidity), and atmospheric pressure; other sensors are also possible. Additionally, accelerometers are now being added to our PTTs to gather information relating to an animal's changes in speed and/or direction. Such information can be used, in conjunction with our developmental acoustic sensor, to infer possible animal reactions to known or assumed external stimuli, such as human generated noise (including aircraft overflights, sonic booms, single event noise, rocket launches, artillery fire, ground vehicle noise, small arms fire). Such a sensor could also be used to ascertain wingbeat frequency from birds to infer such important factors as power consumption and body weight, which are necessary to predict and forecast bird flight dynamics. The use of accelerometers to evaluate avian flight dynamics may play an important role in the development of predictive forecast models for avifauna. We are currently refining our models to evaluate and predict avian flight in relation to military and commercial aircraft traffic.

The new GPS PTTs will provide location estimates to within $\pm$ 100 m, which represents a quantum leap forward in the application of radio-telemetry to wildlife science. GPS readings can be collected according to a pre-programmed schedule to dramatically increase the number of positions that are possible (via satellite) and to enhance our ability to derive important facts regarding species range and habitat use. The acoustic sensor is designed to recognize animal vocalizations, thus allowing more thorough remote study of animal behaviors, species interrelationships, and microhabitat components of an animal's range. The acoustic sensor can also be programmed to monitor and record anthropogenically generated sounds in conjunction with the organisms' response. This capability enhances the study of cause and effect relationships by relating animal responses to discrete military activities.

CONCLUSION: Advanced biotelemetry capabilities that incorporate the latest innovations in microelectronics, GIS, remote sensing, and computer modeling offer great promise in helping to define and characterize human effects on species and ecological communities and to identify strategies to ensure their sustainability in the face of expanding human enterprise. Where military natural resource management issues have a direct impact on readiness, these capabilities (existing and developmental) can provide solutions quickly, at low cost, and with minimal interruption to military land use activities.

As a result of this SERDP project, GPS PTTs for a wide variety of animal species (birds and terrestrial animals) are now commercially available to military and non-military resource managers worldwide.

Purpose/Need: The process of natural resource management and planning begins with a thorough inventory and description of a natural systems' flora and fauna. This information is critical for the development and implementation of effective integrated natural resource management plans. Such plans, in turn, allow land managers, such as the U.S. Department of Defense, to maintain biodiversity, conserve natural resources, and comply with applicable environmental laws and regulations in concert with mission requirements. A central component of effective planning and management is the acquisition of thorough scientific information of: (1) highly mobile species (such as migratory birds); (2) rare, elusive, sensitive, threatened, or endangered species (as well as candidate species); (3) species of concern or otherwise special management species (such as exotics or big game species); and (4) animals that frequent inaccessible habitats or extremely rugged terrain. This process can be difficult and expensive. Complicating matters on military lands, field data gathering efforts often interrupt or conflict with ongoing land-use activities, such as military, mission-related material test/evaluation, troop training, or ground maneuvers. Advanced information gathering technologies—such as wildlife radio-tracking via satellites—provide sophisticated, state-of-the-art, methods to acquire otherwise difficult, expensive, or unattainable data. And these methods create little or no interference with ongoing ground activities.

Project Points of Contact: Dr. William S. Seegar, Senior Scientist, U.S. Army ERDEC, Aberdeen Proving Ground, MD, 21010, (410) 436-2586, e-mail: wsseegar@aol.com or Mr. Blake Henke, Director, Center for Conservation Research & Technology (CCRT), University of Maryland Baltimore County, Room 105 TRC Building, 5200 Westland Blvd., Baltimore, MD, 21227, (410) 961-6692, e-mail: blakehenke@msn.com. CCRT is located at www.ccrt.org.

Partners: U.S. Department of Interior, U.S. Geological Survey Biological Resources Division, Boise State University (BSU), the University of Maryland Baltimore County (UMBC) Center for Conservation Research & Technology (CCRT), Pennsylvania State University (PSU), Johns Hopkins University Applied Physics Laboratory (JHUAPL), U.S. Fish and Wildlife Service, National Park Service, Naval Surface Warfare Center – Dahlgren Division, Bristol University (UK), Partners in Flight.

Recommendations/Lessons Learned: The U.S. military has already reached the conclusion that in order to effectively manage its natural resources in pursuit of maximum training and operational flexibility, it must take a holistic, ecosystem management approach. It is hoped that such an approach will help to identify and remedy natural resource management issues before they affect mission readiness. The SERDP Program has supported the development of new, advanced satellite telemetry hardware and sensors, while the Legacy Program has supported the demonstration and implementation of existing technologies on pilot military bases. Through support from these programs, we are defining the cutting edge of remote tracking and monitoring capabilities. And most importantly, we are using these advanced systems and the resulting data to provide comprehensive analyses and new approaches to pressing wildlife management concerns, as well as to applied operational and safety issues such as aircraft bird strike avoidance.

These technology-based systems are now poised to foster the early integration of military mission planning activities with critical natural resource information. And we stand ready to

employ these tools to provide comprehensive research protocols, methods, hardware, and systems to enable planners and managers to meet military and environmental requirements quickly, cost effectively, with accurate information, and with minimal interruption to regular base activities.

The systems we have developed (and are continuing to refine) and their utility as tools for resource management and conservation continue to be defined and advanced, and the potential applications are practically limitless. Our recommendation to military planners and natural resource managers would be to consider using these technology tools – in conjunction with GIS, remote sensing, and computer modeling – as a means of quickly gathering critical ecological information regarding wildlife movements, natural history, and behavior in conjunction with potential military training and testing impacts, endangered species consultations, and proactive ecosystem management planning on military lands.

SERDP: Advanced Biotelemetry for Resource Management on Military Lands (CS-759)

INTRODUCTION

The Center for Conservation Research & Technology (CCRT) at the University of Maryland Baltimore County (UMBC) and Boise State University (BSU) has developed and demonstrated the use of remote tracking and positioning systems, and the use of telemetry via satellites integrated with geographic information systems (GIS), to resolve natural resource management and conservation issues on military lands. These issues involve Threatened and Endangered species, Neotropical migrants (Partners in Flight Program), and other species of wildlife directly affecting the missions and readiness of DoD installations. Also, CCRT has demonstrated the use of stored data and data repositories as sources of information and as methods by which data can be made readily available for future use.

CCRT has based this project on three (3) established technologies: geographic information systems (GIS), the Global Positioning System (GPS), and radio-telemetry via satellites. Telemetry via satellites operates through the Service Argos system. The system is a cooperative venture among the Centre National d'Etudes Spatiales (CNES, France), the National Aeronautics and Space Administration (NASA, USA), and the National Oceanic and Atmospheric Administration (NOAA, USA). The basic system consists of: (1) platform transmitter terminals (PTTs) mounted on the objects/animals to be tracked, (2) Argos onboard receivers and processors carried by NOAA satellites in low polar orbits, and (3) Service Argos data processing centers in Toulouse, France and Landover, Maryland. Operation begins when the PTT transmits a signal, including data from sensors aboard the PTT, to the satellite receiving and processing package. Service Argos downlinks processed data to the centers for additional computing of the PTT location, using principles of the Doppler shift. Computed locations and sensor data are then distributed to users.

Satellite telemetry has been employed to study seasonal movements of species of raptors, water birds, land and marine animals, and others, many on a worldwide basis. Using this technology, we have conducted a study of wintering golden eagles in relation to land use in the Snake River Birds of Prey National Conservation Area (SRBOPNCA). Here, resident birds are joined by migrants on the military Orchard Training Area (OTA). Satellite telemetry was used to document both the local use areas and migratory tracks of these eagles. Data were then analyzed and displayed using GIS software. We also have used telemetry via satellites and GIS to analyze and display the movements of peregrine falcons as they migrate from their arctic nesting grounds to the southern hemisphere and back. These two examples demonstrate how animals can be studied and data acquired regardless of international boundaries or the remoteness of the area.

GIS software contains powerful geographic data processing tools that can edit, manipulate, manage, analyze, and display cartographic and associated attribute information. GIS technology, originally developed by the DoD, is now used by various commercial, scientific, and defense industries to create and analyze topographical and spatial relationships to make informed business, research, disaster preparedness, and resource management decisions.

GPS is a space-based system incorporating a constellation of earth orbiting satellites. This DoD developed and administered system triangulates a position of a receiver using precise time and position information broadcast from satellites. GPS receivers are used for air, marine, and land

navigation and to accurately locate ground positions, including habitat which, in turn, is needed to interpret digital satellite images such as LANDSAT.

This SERDP project was conducted in parallel with a Legacy field demonstration of existing satellite telemetry technologies. The SERDP project was designed to provide enhanced and expanded capabilities for tracking and monitoring wildlife species on military lands for resource management applications. Four military installations were chosen for the Legacy demonstration representing Army, Navy, and Army National Guard. These were: Dugway Proving Ground, Utah; Naval Air Station Fallon, Nevada; the Orchard Training Area, Idaho; and White Sands Missile Range, New Mexico. The training and testing missions of these installations create a variety of resource management problems that can be addressed by technologies and methodologies of this demonstration. Our demonstration also included Neotropical migratory birds, the management of which has implications for military operations, and to which the DoD provides support through the multi-agency Partners in Flight Program.

SECTION I

Johns Hopkins University Technical Digest Article: "Fifteen Years of Satellite Tracking Development and Application to Wildlife Research and Conservation." Volume 17, Number 4, pp. 401-411, October, 1996.

Fifteen Years of Satellite Tracking Development and Application to Wildlife Research and Conservation

William S. Seegar, Protagoras N. Cutchis, Mark R. Fuller, Joseph J. Suter, Vipul Bhatnagar, and Joseph G. Wall

A small satellite-based tracking system that is light enough to be carried on birds was developed in the 1980s at the Applied Physics Laboratory. A new, more capable generation is now under development that will contain, in addition to the Argos tracking platform transmitter terminal, a global positioning system receiver and a complement of advanced sensors. The sensors may include a digital audio capture system and a black-and-white charge-coupled device camera. The history of the program and plans for future development are discussed.

INTRODUCTION

Fifteen years ago, the U.S. Army initiated a program at APL to investigate the development of small platform transmitter terminals (PTTs) to be tracked by the French–U.S. Argos–Tiros satellite system.[1] Since the inception of the program, miniaturization has led to the fielding of transmitters that weigh less than 28 g and can interface with an array of sensors. Results of field tests during the late 1980s and early 1990s, examples of applications, and continued development of the technology are reported here.

In 1981, the Bird-Borne Program was initiated at APL to develop a capability to locate (i.e., track) and monitor small, highly mobile animals on a local, regional, and global scale. The primary objective of the Bird-Borne Program and the Remote Environmental Sensing Technology Program was to develop a satellite transmitter for the remote tracking and monitoring of free-ranging animals. Avian species were the focus because of their relatively small size and high mobility. Additional focus has been on birds of prey, which are top predators and scavengers that are widely dispersed and can move quickly over rugged, inaccessible terrain.

Conventional biotelemetry enables biologists to locate previously captured and radio-tagged animals. Biotelemetry also can be used to collect information from the environment surrounding the animal (temperature, humidity, and altitude) as well as behavioral and physiological parameters (motion, core temperature, and heart rate) of the animal.[2] Until biotelemetry became available, information on free-ranging animals was difficult to obtain. For many secretive animals it could only be inferred from meticulous indirect sampling methodologies. Biotelemetry has enabled scientists to accurately study behavior, home range, and habitat use of wildlife for basic research and the development of management plans for conservation.

Conventional biotelemetry systems often use directional receiving antennas to locate or triangulate transmitters. They are usually restricted to small geographic areas accessed on foot, by automobiles, or by aircraft.[2]

However, for studies of free-ranging animals that travel long distances over extended periods and frequent habitats that are inaccessible because of geographic or boundary restrictions such as military installations, space-based tracking and monitoring systems are advantageous. The study and conservation of migratory birds are topics to which the application of telemetry via satellites is especially useful.

Each year hundreds of thousands of birds representing many species cross dozens of geopolitical boundaries migrating from their North American breeding grounds to milder climates as far south as Central and South America. During migration, these birds stop to rest and feed in areas that provide resources to shelter them and fuel their flight. These areas are critical habitats for many species, and without continued management of the habitats, avifauna could be lost on a large scale. The problems inherent in the study of migrants represent major barriers to the effective management of these species, many of which are declining in numbers annually.[3] Remote tracking and monitoring systems can support effective study of these animals and aid in identifying their range and critical habitat requirements for breeding, migration, and wintering.

As a signatory to Partners in Flight, a program to study and conserve neotropical migrants, the Department of Defense contributes with comprehensive effort in environmental technology and conservation. The DoD is the third-largest land holder in the United States. It uses the lands for research and development; material test, evaluation, and production; and comprehensive training programs to maintain military readiness for national security. It has established requirements for environmental research, technology development, and land management and supports a variety of programs such as Legacy and the Strategic Environmental Research and Development Program to achieve excellence in natural resources management. The conventional collection of field data by scientists on free-ranging animals found within military installations often conflicts with the military mission and requires the temporary suspension of military activities because of their inherent hazards and classified aspects. Furthermore, biological studies designed to evaluate the effects of military land use on natural resources pose unique and difficult problems because biological data must be collected during military activities. Advanced technologies that allow remote tracking and monitoring of wildlife can alleviate many of these conflicts yet provide comprehensive data.

The Bird-Borne Program's effort to develop a space-based tracking and monitoring capability started with a study to evaluate the critical engineering paths to build a satellite transmitter for use on free-ranging birds. Requirements for the development of the first prototype satellite transmitter were (1) identify a space-based system for transmitter development, (2) develop a PTT weighing less than 200 g, (3) allow for 270 days of operation, and (4) accommodate environmental, behavioral, and physiological sensors on the PTT.[4]

The French-operated Argos system implemented in the 1970s proved to be the basis for the development of a bird-borne transmitter. The Argos system, dedicated to environmental monitoring, consists of receivers on the Tiros N series of National Oceanic and Atmospheric Administration satellites positioned in low (850-km) polar orbits. The Argos system and PTTs were being used to monitor and track atmospheric balloons and pelagic buoys to collect marine and meteorological data. The PTTs operated with primary batteries and weighed 1 kg or more. The location of PTTs is determined on the basis of Doppler shift, which is dependent on a highly stable frequency transmission at 401.6 MHz. Because the accuracy of the position is based on the stability of the signal frequency, all the available transmitters in the early 1980s had crystal oscillators that were maintained in constant-temperature ovens. The large power requirement for the operation of the heated crystal oscillator oven posed a serious technology barrier for the miniaturization of a bird-borne PTT.[4]

A bird-borne PTT had to be relatively small (<200 g) to avoid adversely affecting bird flight.[5,6] The Argos system required PTTs to transmit a minimum of 1.0 W. To meet this power requirement for transmission for 270 days required 500 g of primary batteries. This approach exceeded by more than a factor of 2 the maximum mass of the prototype bird-borne package. Therefore, we initially met the power requirement by using a solar array with rechargeable nickel–cadmium batteries. This power pack allowed for a duration of nearly 1000 recharging cycles, or nearly 3 years. The constant-temperature oven for the crystal oscillator was eliminated with the development of a temperature-compensated crystal oscillator, which was one of many innovative electronics designs produced by the Bird-Borne Program.[4] A 180-g prototype PTT was developed and field tested in 1983 on a mute swan captured on the Eastern Shore of Maryland. The mute swan carried the PTT aloft during the summer of 1983, and this test led to a series of additional field tests with other avian species.[7]

In the autumn of 1984, the APL bird-borne transmitter was placed on an endangered bald eagle captured on the Aberdeen peninsula in the northern Chesapeake Bay of Maryland. Bald eagles are common winter visitors on the Aberdeen Proving Ground (APG), and they are carefully managed by the U.S. Army. A winter roost for bald eagles, one of the largest in the lower 48 states, holding as many as 100 bald eagles, is located at

APG. The captured eagle was the focus of a study to examine the distribution of eagles on the military installation and examine their relation to military activities as well as to the surrounding land use in the northern Chesapeake Bay.[8] The eagle was equipped with the PTT, released, and tracked for 9 months.[7] The eagle initially moved north into Pennsylvania after visiting a critical roost and foraging area for many eagles along the Susquehanna River below the Conowingo Dam. During the course of the next 270 days, the eagle returned to its natal origin in South Carolina and then flew south through Atlanta, Georgia, to winter in St. Augustine, Florida. In the spring, the eagle began northward flights and then the transmitter lost power on the Georgia barrier islands. This eagle was found 5 years later (with the PPT intact), after it had been struck by a train. The first swan and eagle tracked with the prototype transmitters developed at APL provided valuable insight into the application of this technology to the study of large avian species. Subsequently, we tested and evaluated this technology on other bald eagles, swans, and giant petrels.[7,9,10]

TECHNOLOGY APPLICATION

Some of the first applications of PTTs to natural resources management issues were with golden eagles. In Canada, golden eagles had been selected as a species for a Hydro-Quebec project to evaluate the effect of flooding caused by a large hydroelectric dam south of James Bay, Ontario. Eagles from the affected area were tagged with PPTs and tracked south to their wintering grounds in the eastern United States. The golden eagles, tracked via satellites, distributed themselves over the entire known eastern U.S. wintering range for the species, thereby establishing the James Bay area as important for the maintenance of the species in eastern North America.[11,12]

In 1990, a comprehensive study was initiated on golden eagles for the Idaho Army National Guard in the Orchard Training Area south of Boise, Idaho. The Orchard Training Area is centrally located within the Snake River Birds of Prey National Conservation Area. In the Orchard Training Area, we examined the spatial relationships of military training to golden eagle movements. Telemetry through the Argos–Tiros satellites was required because eagles of unknown origin joined the resident birds (tagged with conventional transmitters) during the winter. The new arrivals were tagged with PTTs. Initial results of ongoing work have shown that some eagles use the military training area extensively to winter; most adult birds remain on the military area, whereas younger golden eagles use it less extensively and range widely (Fig. 1). Also, unique information on the breeding areas of the adult eagles was obtained within the first year of the study. Eagles that wintered in the Orchard Training Area were thought to come from breeding areas northwest of Boise, Idaho. During the spring of 1993, all the adult eagles tracked via satellite migrated to breeding locations in central Alaska and western Canada (Fig. 1). This new information is important for the development of natural resource management plans for the Idaho Army National Guard training program. During periods of high military training activity in the late spring and summer, a large component of golden eagles that use the area

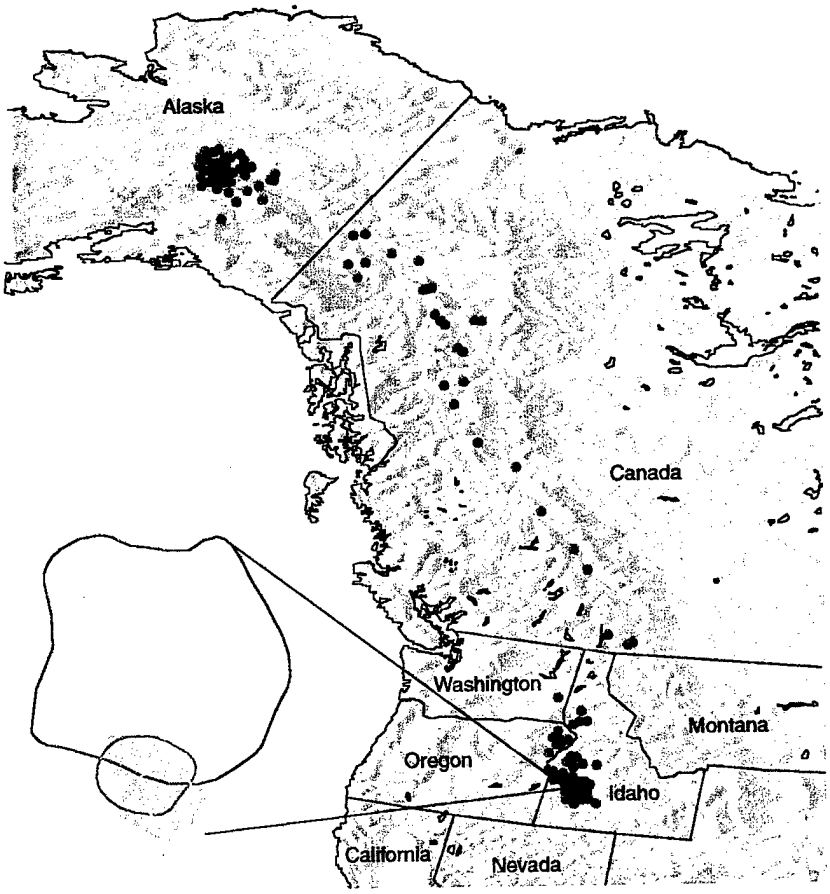


Figure 1. Inset shows the wintering home range of a subadult golden eagle (red circle) and two adult golden eagles (blue and yellow circles) overlayed on the boundary of the Idaho Army National Guard Orchard Training Area, located south of Boise, Idaho, in the Snake River Birds of Prey National Conservation Area. Large map shows the migration of wintering golden eagles to their breeding grounds in western Canada and Alaska.

annually in the winter is absent and thus not affected by training.

During the late 1980s and early 1990s, the application of tracking birds via satellite expanded because PTTs were miniaturized; thus, the number of species that could carry the PTT increased. Our use of radio tagging always has been based on careful consideration of the effects of the transmitters on birds' behavior and flight.[13–15] Since the early 1990s, over 500 PTTs have been deployed on more than 20 avian species on a global scale.[12] In the autumn of 1993, the first PTTs (NANO 100 Model, Microwave Telemetry, Inc.) weighing 27 g were attached to tundra peregrine falcons (Fig. 2), an endangered species and neotropical migrant that breeds as far north as the Arctic and winters primarily in Central and South America. During the following 24 months, 50 PTTs were deployed on peregrines in five locations in North America and one location in the western Russian Arctic. Results of this effort have been applied to our goal of describing the range of this endangered species and identifying critical breeding, migratory, and wintering areas for the conservation of peregrines.

With the assistance of Michael Yates, Thomas Maechtle, James Dayton, Linda Schueck, and other colleagues, we radio-tagged and tracked peregrines during the autumn in Maryland and Virginia on Assateague Island and along the Texas Gulf Coast on Padre Island. Also, we tagged adults on Padre Island in the spring as they moved out of Latin America, north to their Arctic breeding grounds. Padre Island, Texas, is the only known staging area for the tundra peregrine in the Northern Hemisphere and provides a critical migratory habitat for the species during northern flights. Some PTTs were programmed to operate for 12 months, transmitting for 8 hours every 3 days during migration and then switching to a 6-day cycle of transmission during breeding and wintering periods when the birds were more sedentary. During the breeding season of 1994, David Bird, Robert Johnstone, and others helped us place PTTs on adult females in Ungava Bay and Rankin Inlet, Canada. In Kangerlussauq, Greenland, with the support of William Mattox and the Greenland Peregrine Falcon Survey, and on the Kola Peninsula, Russia, with Sergi Ganusavich, we also marked breeding female peregrines. During the past 24 months, we have collected over 6000 positions for these peregrines. These data have provided more information on the species distribution in the Northern and Southern hemispheres than 25 years of conventional field studies and banding returns. The PTT-tagged peregrines from this sample of 50 wintered from Delaware to Argentina and returned to breeding grounds across the northern Arctic from Alaska to Greenland (Fig. 3).

The individual migratory paths of peregrines have been interesting. For example, peregrine no. 5707 (a female) was captured in the spring on Padre Island, Texas, and provided unique information about a wandering nonbreeding adult (Fig. 4). This falcon flew from the Texas Gulf Coast to the Rankin Inlet study area where nonbreeding peregrines are commonly seen by biologists studying this species (personal communication, R. John-stone, Nov 1995). She then left the western shore of Hudson Bay, traveled to southern Baffin Island, and went north to the Arctic Ocean. During fall migration, she traveled from northern Baffin Island, south by way of the eastern coastal flyway, to a wintering area along the northern coast of Venezuela. This information was collected and mapped on a computer, at a minimal cost of field time and expense. Furthermore, it provided regular data from a bird flying through areas that simply could not be effectively covered by conventional wildlife tracking methods.

Figure 2. Peregrine falcon with a platform transmitter terminal.

During the past 15 years, the electronics in the satellite transmitter have been continually miniaturized and have provided new capabilities through the integration of microprocessors and minicomputers (Fig. 5). The newest experimental bird-borne transmitter produced by Microwave Telemetry, Inc., weighs 20 g, which includes 3.5 g of electronics, an 8.0-g battery, and an

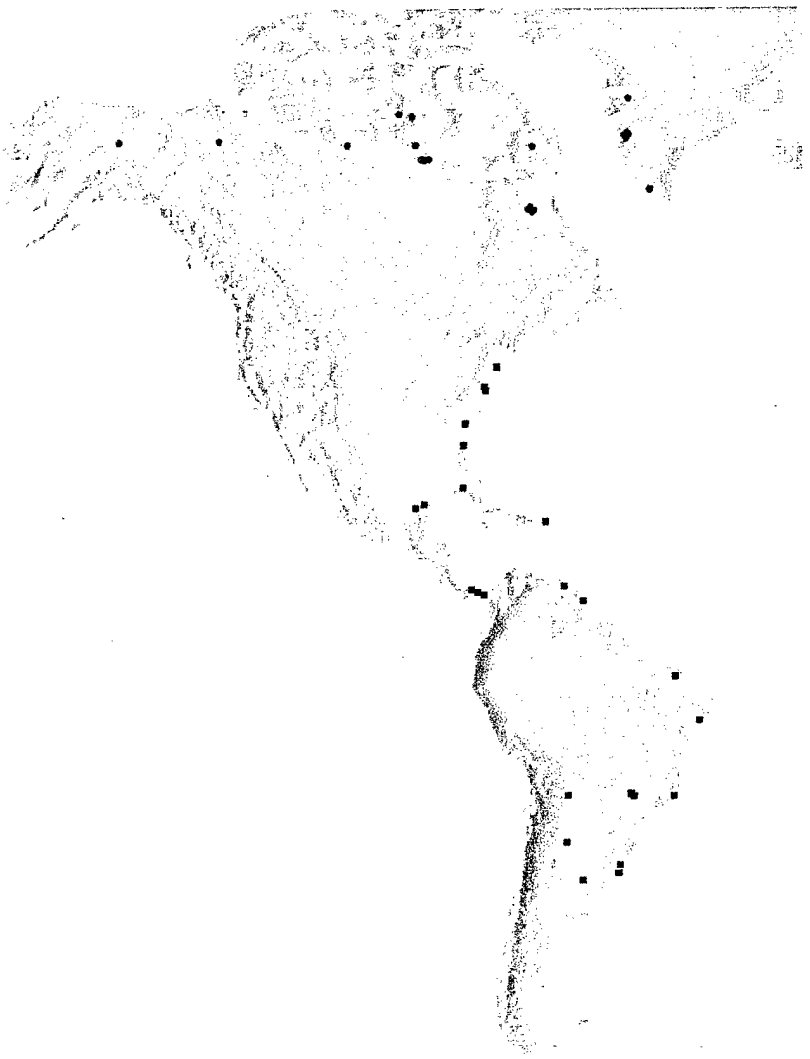


Figure 3. Arctic breeding locations (red circles) and wintering ground locations (blue squares) of tundra peregrine falcons as determined by satellite tracking.

8.5-g container. The transmitter can interface with a variety of sensors to collect information from the animal's environment as well as behavioral data. This technology is now being used to gather data and address questions and issues that were previously either impossible or too costly to consider with conventional methods. Many colleagues are now applying PTTs to the study of birds[12] as well as other wide-ranging animals.[16] We are combining satellite-based tracking technology with other technology and with innovative approaches to the research and management of natural resources.[17]

In the autumn of 1995, under the auspices of the DoD-sponsored Legacy Program called Satellite Tracking and Monitoring Threatened, Endangered and Neotropical Species, four Swainson's hawks were radiomarked for demonstration on the Orchard Training Area. These hawks were instrumented to track their movements over the Orchard Training Area and to demonstrate use of the Argos system with a geographic information system to remotely track and monitor sensitive species. A second phase of the demonstration revealed the migration path and wintering locations of the birds in South America. The Swainson's hawk is listed as a species of concern by five states and the Bureau of Land Management and as a special emphasis species by the U.S. Forest Service in some areas. Nesting population declines have been reported over much of the hawks' range, including Dugway Proving Grounds, although not in all areas. With no obvious reason for this decline, scientists postulated that problems along migration routes or in wintering areas were responsible. In 1994, two Swainson's hawks were equipped with PTTs as part of a pilot study to determine the winter destination of northern Californian Swainson's hawks. During a subsequent visit to a wintering site indicated by a satellite-tracked PTT, communal roosts were discovered in the Pampas area of Argentina, and over 700 recently killed hawks were documented adjacent to agricultural fields.[18]

An investigation began, and in 1995, biologists from federal, state, and local governments, as well as private institutions in the United States and Canada, teamed to track the destinations of 12 Swainson's hawks from Saskatchewan, Idaho, Utah, California, and Colorado. In January 1996, scientists visited different areas indicated by the satellite-derived location data, including the area visited in 1994. They counted over 4000 dead hawks, apparently killed by pesticide applications, and believe the actual mortality numbers exceeded 20,000. With adults representing nearly 90% of the dead birds and the entire Canadian Swainson's hawk population estimated to be between 20,000 and 40,000 pairs, this mortality estimate indicates a serious threat to the survival of the species.

This application of satellite tracking is a perfect demonstration of the unique advantage this technology can provide in the study of a wide-ranging species. As the technology evolves, future sensors for animal tracking units will include a capability to monitor chemicals in the animals' environment. Many research

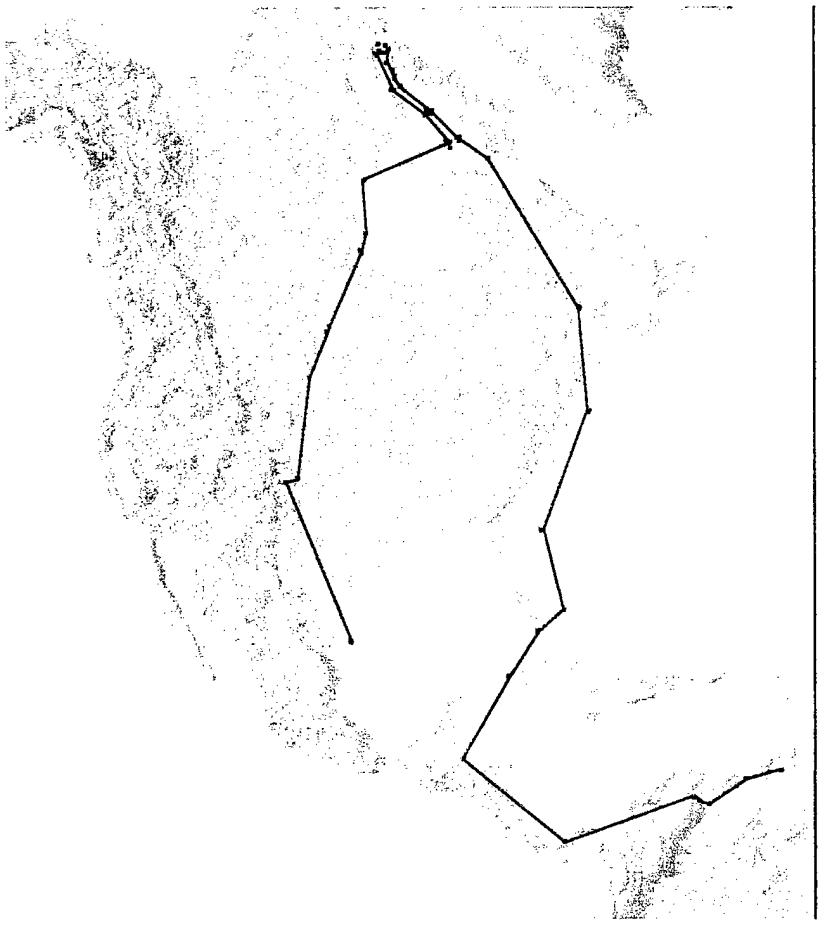


Figure 4. Movements of a nonbreeding tundra peregrine falcon captured on Padre Island, Texas. Migration from Padre Island to Baffin Island in the spring of 1994 is shown as a broken line. Migration from Baffin Island to Venezuela in the fall of 1994 is shown as a solid line.

questions remain, however, and important conservation issues need to be addressed in a timely, effective manner. Both issues would benefit from additional development of the technology.

CURRENT TECHNOLOGY DEVELOPMENT

In this section we discuss the development of a bird-borne transmitter that will incorporate a behavioral noise monitor to assist in the interpretation of acoustical information to link time and location to discrete animal behaviors. The feasibility of integrating a miniature camera with the new generation of bird-borne transmitters for the collection of pictorial data pertinent to the habitat surrounding the radio-tagged animal is also discussed. Finally, we report on the integration of these sensors being developed at APL with a new generation of commercially available Global Positioning System (GPS)–equipped Argos PTTs for enhanced acquisition of accurate positioning data.

Digital Audio Capture and Control Circuit

Figure 6 is a block diagram of the entire electronics system of the digital audio capture and control circuit for monitoring behavioral noise. The design of the digital audio capture circuit centers on an 8-bit microcontroller. This device was chosen because it has several system components on a single chip, and small size and weight are critical in this system's design. The subsystems of the microcontroller are the internal universal asynchronous receiver transmitter (UART), internal timer, internal random-access memory (RAM), electrically erasable programmable read-only memory (EEPROM), and 8-bit analog-to-digital converter. The analog-to-digital converter is used to sample the amplified signal from

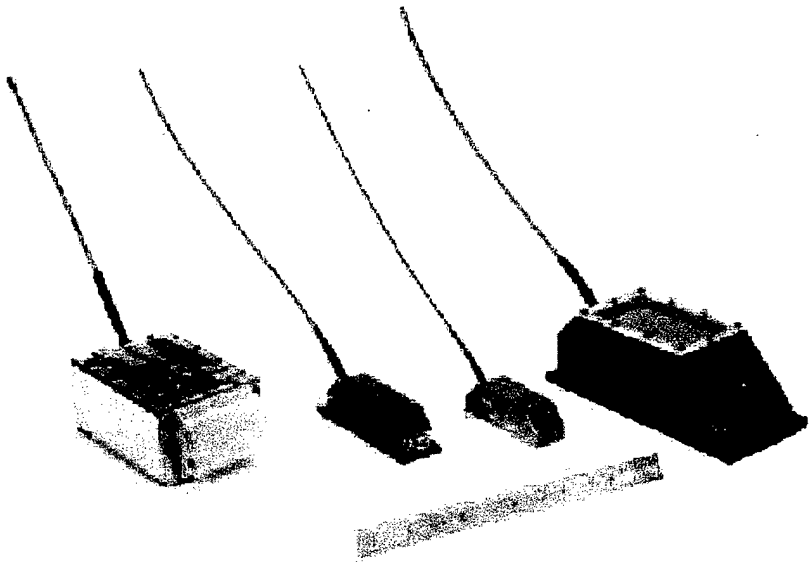


Figure 5. Argos platform transmitter terminals, left to right: Early solar-powered PPT (APL), 30- and 20-g Nano PPTs (Microwave Telemetry, Inc.), and prototye solar-powered GPS/PPT (Microwave Telemetry, Inc.).

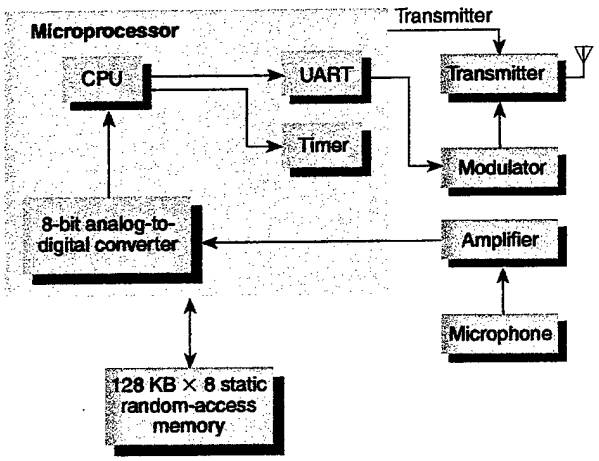


Figure 6. Block diagram of the audio capture and transmission system showing the central processing unit (CPU), universal asynchronous receiver transmitter (UART), and other system components.

the electret condenser microphone. The audio sample is then immediately stored in memory for future transmission.

The 8-bit microcontroller can directly address only 64 kilobytes (KB) of memory space. Therefore, page-mode addressing is implemented using a separate output bit to control the highest address line (A16) of the memory. If more than 128 KB of memory is required in future versions, enough spare gates and microprocessor output pins are present on the existing design to increase memory to 512 KB.

The initial memory configuration, which used two 32-KB memory chips, was replaced with a single 128-KB memory chip. The sampling rate, which can be easily changed in software, was set at 6000 samples per second to yield reasonable quality audio playback. Initial experiments were conducted with a sampling rate of 2700 samples per second and proved to yield marginal results for the intended system use. There is a direct trade-off between sampling rate and total record time. At 6000 samples per second and using 128 KB (actually 131,072 bytes) less 4096 bytes for EEPROM (and the image of EEPROM in upper memory, which is inaccessible in the present implementation), the total record time available is 126,976/6000 = 21.1 s.

The microprocessor's on-chip UART is used to generate the serial data stream during transmission. The data rate is programmable and has been set to 9600 bits per second because of requirements of the prototype modulator. The data rate is not infinitely flexible; it is obtained from selectable divide ratios of the microprocessor's clock. The present data format is 8 data bits per word with 1 start bit, 1 stop bit, and no parity bit. Lastly, during transmission, a line called transmit is brought low to activate the transmitter. This line activates the transmitter approximately 200 ms before data transmission starts to allow the transmitter to stabilize. This microcontroller portion of the system may also serve as the control for future features such as a GPS receiver. The microprocessor will then reformat and transmit the data either through the Argos satellite or to a ground-based receiver.

We anticipate that the entire digital portion of the audio capture system, including the microphone, could be built on a 5 × 5 cm circuit board weighing about 16 g. All components used in the design are available in surface-mount packages. The prototype breadboard and a mock-up of the circuit board for the actual bird-mounted unit are shown in Fig. 7. The breadboard includes components for audio playback testing not required in the actual device and not included in the mock-up.

Miniature Video Camera

The image sensor chosen for the miniature video camera application is a highly integrated complementary metal oxide semiconductor device. The single chip, VVL 1070 (made by VLSI Vision Limited, United Kingdom), is a functionally complete monochrome camera able to generate either analog or digital output. The sensor array has a pixel dimension of 160 × 160. Each square pixel is 10.5 μm on a side. When the camera is configured to generate an analog signal, each frame is preceded by a synchronization pulse. When configured for digital output, the camera generates an 8-bit serial or parallel data stream. Each pixel's intensity is 8-bit quantized, giving an intensity dynamic range of 256 to 1.

The camera packaged chip measures 1.7 × 1.7 cm, is 0.267 cm high, and weighs less than 2 g. The camera requires a modest amount of external circuitry for analog signal generation. At present, the camera is mounted on a circular circuit board with a diameter of 3.18 cm (Fig. 8). The camera requires a regulated 5-V, 20-mA power supply.

The camera's exposure can be set to either automatic or manual mode. In manual mode, the exposure is set by incrementing (or decrementing) the contents of the exposure register. In automatic mode, the camera dynamically varies the exposure so that the average pixel's intensity lies halfway at its maximum. The facility to electronically control the exposure allows the use of a simple, inexpensive, fixed-aperture lens. The camera's frame rate (i.e., exposure time) is variable between 0.5 and 24 frames per second. If it is desirable to view dynamic scenes (scenes that may change over a period of 40 ms), an external shutter will have to be incorporated into the camera's operation.

For an application such as animal monitoring, where the camera will be operated remotely from its central

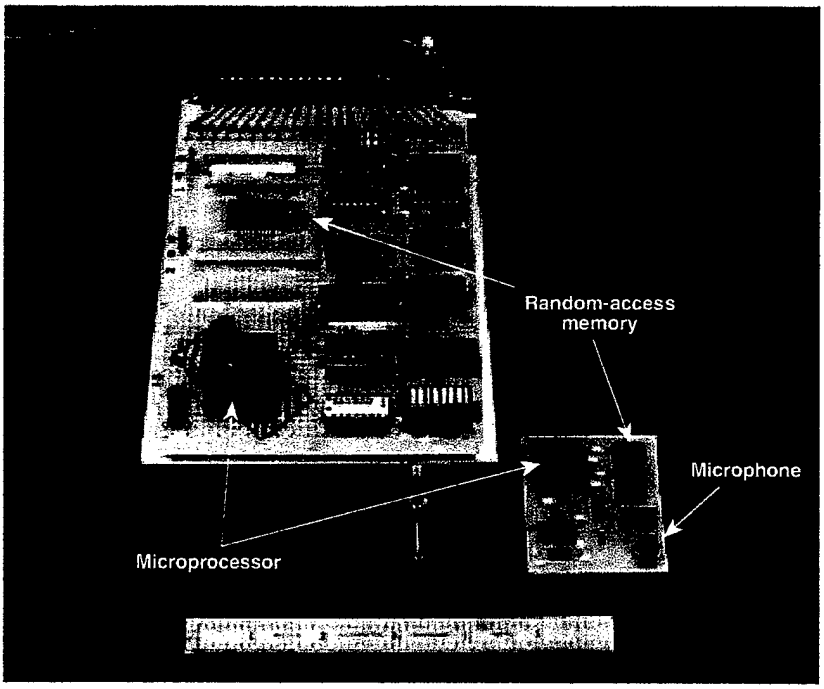


Figure 7. Photograph of the breadboard (left) and mock-up (right) of the digital audio capture system.

control, the digital mode is preferable because the image data can be stored indefinitely aboard the sensor package and transmitted at a pre-arranged time. Using the camera in analog mode would require real-time broadcast of the video signal, complicating the sensor power management (because the radio frequency transmitter is the biggest consumer of electrical power).

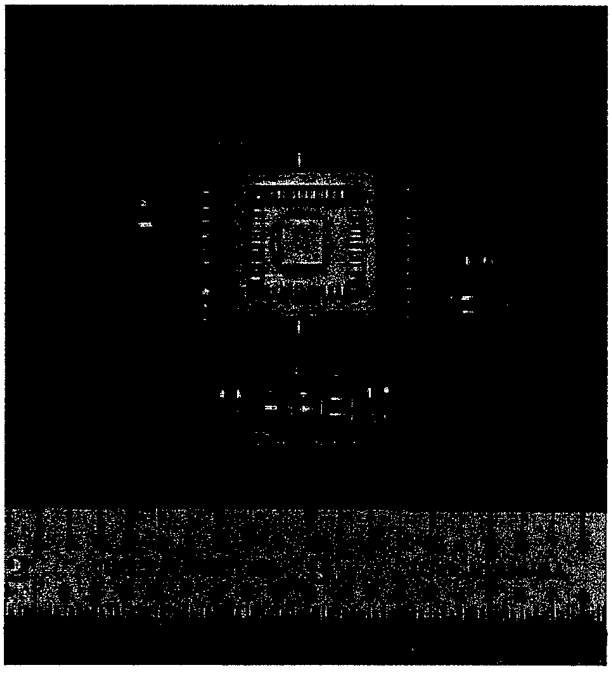


Figure 8. Miniature single-chip camera. (Note: The scale shown is in inches.)

A GPS-Qualified Argos PTT

The Argos system can provide locations to within ±150 m anywhere on the surface of the Earth, but locations obtained from tiny, low-power (100 mW) Argos beacons, mounted on the backs of birds, often give locations in the range of ±2 km of the birds' true locations. To achieve the highest-grade Argos location, at least four messages must reach the satellite over a period exceeding 420 s. A single Argos message can relay up to 256 bits of information from sensors on the transmitter to the user via the satellite.

The availability of small commercial GPS receiver modules has now made it possible to combine such a receiver with an Argos transmitter and field a package small enough to be carried by an eagle-size bird. By scheduling the collection of GPS locations throughout the day and storing these positions for later transmission via Argos, as many as 20 GPS positions (±20 m) can be transmitted to the user in a single Argos message.

The present Argos/GPS package under development by Microwave Telemetry, Inc., incorporates a commercially available GPS receiver, a microcontroller-based data logger, and a Microwave Telemetry PTT. The data logger controls the GPS receiver and the collection of GPS data, which is dependent on the availability of power from the solar-charged power source. The data logger then sequences data transfer to the PTT at times favorable to satellite availability. The prototype unit is now undergoing laboratory testing; it weighs less than 200 g.

The satellite transmitter, audio capture, and video circuitry could be further miniaturized by taking advantage of chip-on-board packaging, stacked-die techniques, and application-specific integrated circuit development. Development of these high-level circuit integration techniques is currently being pursued at a variety of companies and research laboratories, including APL.

DISCUSSION

The technology we have described is designed for use on free-ranging animals to provide data on their locations, behavior, and environment. A GPS receiver integrated with an Argos PTT will provide more accurate location data that can be collected at predesignated times. The Argos system is dependent upon collecting frequency data on the PTT signal transmission to calculate a single time-dependent location. With the use of a minicomputer integrated into the unit, GPS positions can be collected according to a programmed schedule to increase our ability to locate free-ranging animals and to derive important facts regarding range and habitat use. With enhanced accuracy and greater numbers of locations, home range estimations, programs, and subroutines in geographic information systems can be used more effectively to relate animal movements to jurisdiction boundaries, habitats, and land-use activity maps.

Sensor data, combined with time and location, can provide additional information relevant to natural resources. For example, the behavioral noise monitor is designed to recognize animal vocalizations, thus allowing evaluation of animal behaviors and specific activities. By locating exact animal behaviors and linking them to specific habitats within the animal's range, valuable information can be collected on relationships among animals and microhabitat components of their range. Time-coded information on location, heading, altitude, speed, ambient temperature, humidity, and other sensor data can be displayed and analyzed relative to other geographically linked features such as geomorphology, ecological community, meteorology, and land-use activities. Free-ranging animals tagged with animal track and monitor units act as sentinels in the population. These sentinels, moving either alone or in herds or flocks, can reflect the activities of many animals and enhance the biological database dramatically.

Biologists and military operations staff can integrate a real-time military training monitor system, such as the Deployable Force-on-Force Instrumented Range System (DFIRST), with natural resource information. The DFIRST system allows commanders to track military training activities and monitor units (armored vehicles, etc.) simultaneously in real time. This system can provide locations of equipment and troop movements on an installation. This database, when layered into a geographic information system with natural resource data, can be used to evaluate the effects of military land-use activities on natural resources. In such a system, models could be developed for each installation that would monitor vegetation, habitat, key sentinel animals, and military activities, and in near real time examine the cause-and-effect relationships that exist among these elements. This system approach will enable environmental planners and military managers to develop a natural resource forecast function that brings a dynamic prediction and planning component into the process of installation management.

The military is beginning to integrate natural resource issues and mission planning to foster ecosystem management, protect biodiversity, and enhance conservation where such measures can be linked to readiness. Such an approach also will allow for maximum flexibility to achieve readiness. The technology-based systems being developed here will allow the early integration of military mission planning activities with natural resource information, thus dynamically supporting both environmental and military requirements.

The process of resource management on military installations begins with a thorough inventory and description of the natural system and the land-use activities. Programs such as the DoD Legacy efforts are directed at demonstrating data acquisition for installations and maintaining the information for local, regional, and national planning and management. An inventory provides information on the presence and range of flora and fauna on a local to regional scale and delimits habitat and ecosystem parameters. With the development and use of remote tracking and monitoring technology, we will be able to provide methods, hardware, and systems that will allow planners and managers to meet both military and environmental requirements quickly, with good information, and with minimal interruption to regular base activities.

REFERENCES

[1] Fuller, M. R., Levanon, N., Strikwerda, T. E., Seegar, W. S., Wall, J., Black, H. D, Howey, P. W., and Partelow, J., "Feasibility of Bird-Borne Transmitter for Tracking via Satellite," in *Biotelemetry VIII*, H. P. Kimmick and H. J. Klewe (eds.), Kimmich/Klewe, Nijmegen, The Netherlands, pp. 375–378 (1984).

[2] Samuel, M. D., and Fuller, M. R., "Wildlife Radio Telemetry," in *Research and Management Techniques for Wildlife and Habitats*, T. A. Bookout (ed.), The Wildlife Society, Bethesda, MD, pp. 370–417 (1994).

[3] Peterjohn, B. G., Sauer, J. R., and Robbins, C. S., "Population Trends from the North American Breeding Bird Survey," in *Ecology and Management of Neotropical Migratory Birds*, T. E. Martin and D. M. Finch (eds.), Oxford Univ. Press, New York, pp. 3–39 (1995).

[4] Strikwerda, T. E., Black, H. D., Levanon, N., and Howey, P. W., "The Bird-Borne Transmitter," *Johns Hopkins APL Tech. Dig.* 6, 60–67 (1985).

[5] Pennycuick, C. J., and Fuller, M. R., "Considerations of Effects of Radio Transmitters on Bird Flight," in *Biotelemetry IX*, H. P. Kimmich and M. R. Neuman (eds.), Doring-Druck, Braunschweig, Germany, pp. 327–330 (1987).

[6] Pennycuick, C. J., Fuller, M. R., and McAllister, L., "Climbing Performance of Harris' Hawks (*Parabuteo Unicinctus*) with Added Load: Implications for Muscle Mechanics and for Radiotracking," *J. Exp. Biol.* 142, 17–29 (1989).

[7] Strikwerda, T. E., Fuller, M. R., Seegar, W. S., Howey, P. W., and Black, J. D., "Bird-Borne Satellite Transmitter and Location Program," *Johns Hopkins APL Tech. Dig* 7, 203–208 (1986).

[8] Buehler, D. A., Mersmann, T. J., Fraser, J. D., and Seegar, J. K. D., "Nonbreeding Bald Eagle Communal and Solitary Roosting Behavior and Roost Habitat on the Northern Chesapeake Bay," *J. Wildl. Manage.* 55, 273–281 (1991).

[9] Howey, P. W. "Tracking of Birds by Satellite," in *Wildlife Telemetry, Remote Monitoring and Tracking of Animals*, I. G. Priede and S. S. Swift (eds.), Ellis Horwood, New York, pp. 177–184 (1992).

[10] Grubb, T. G., Bowerman, W. W., and Howey, P. H., "Tracking Local and Seasonal Movements of Wintering Bald Eagles from Arizona and Michigan with Satellite Telemetry," in *Raptor Conservation Today; World Working Group on Birds of Prey*, B. U. Meyburg and R. D. Chancellor (eds.), Pica Press, East Sussex, UK, pp. 347–358 (1994).

[11] Brodeur, S., and Dearie, R., *Tude Telemetrique de Aigle Royal* (Aquilo Chrysaetos), Rapport Final, G.R.E.B.E., Montreal, p. 109 (1993).

[12]Fuller, M. R., Seegar, W. S., Marzluff, J. M., and Hoover, B. A, "Raptors, Technological Tools and Conservation," *Trans. 60th N. Am. Wildl. & Natur. Resour. Conf.*, pp. 131–141 (1995).
[13]Obrecht, H. H., III, Pennycuick, C. J., and Fuller, M. R., "Wind Tunnel Experiments to Assess the Effect of Back-Mounted Radio Transmitters on Bird Body Drag," *J. Exp. Biol.* **135**, 265–273 (1988).
[14]Gessaman, J. A., Fuller, M. R., Pekings, P. J., and Duke, G. E., "Resting Metabolic Rate of Golden Eagles, Bald Eagles, and Barred Owls with a Tracking Transmitter or an Equivalent Load," *Wilson Bull.* **103**, 261–265 (1991).
[15]Buehler, D. A., Fraser, J. D., Fuller, M. R., McAllister, L. S., and Seegar, J. K. D., "Captive and Field-Tested Radio Transmitter Attachments for Bald Eagles," *J. Field Ornithol.* **66**, 173–180 (1995).
[16]McConnell, B. J., Chambers, C., Nicholas, K. S., and Fedak, M. A., "Satellite Tracking of Grey Seals (*Halichoerus Grypus*)," *J. Zool. Lond.* **226**, 271–282 (1992).
[17]Fuller, M. R., Seegar, W. S., and Howey, P. W., "The Use of Satellite Systems for the Study of Bird Migration," *Is. J. Zool.* **41**, 243–252 (1995).
[18]Woodbridge, B., Finlay, K. K., and Seagar, S. T., "An Investigtion of the Swainson's Hawk in Argentina," *J. Raptor Res.* **29**, 202–204 (1995).

ACKNOWLEDGMENTS: We would like to thank Paul Howey for 15 years of unyielding dedication to the development and application of satellite telemetry for the conservation of avifauna; Blake Henke for careful review of the manuscript; and those who are involved in the satellite tracking program: Harold Black, Charles Blackburn, John Daniels, James Dayton, Nadev Levanon, Stanley Mantel, Thomas Sanderson, and Thomas Strickwerda. Support for this work was provided by the Strategic Environmental Research and Development Program, the Legacy Program, and the Edgewood Research, Development and Engineering Center.

THE AUTHORS

WILLIAM S. SEEGAR received his B.A. from the College of Wooster, Ohio, and his Ph.D. in pathobiology from The Johns Hopkins University School of Hygiene and Public Health. Dr. Seegar was the recipient of a National Research Service Award at Johns Hopkins; was a NATO Research Fellow at Slimbridge and Oxford University, England; and received the Civilian Research and Development Award for management of the Bird-Borne Program at APL. He is currently with the U.S. Army Edgewood Research and Development Center, where he is developing interface capabilities between space-based tracking and monitoring systems and the rapidly evolving field of computer-based geographic information systems for natural resource management and conservation. His e-mail address is wsseegar@cbdcom.apgea.army.mil.

PROTAGORAS N. CUTCHIS received B.S. degrees in electrical engineering and physics from the University of Maryland in 1979. He received an M.D. in 1983 and an M.S.E.E. in 1990, both from the University of Maryland. He has been on the senior staff at APL since 1986 and has worked on numerous biomedical programs including a manually actuated hydraulic sphincter and a hydrocephalus shunt system. In 1994, he was awarded the Lawrence Hafsted fellowship to conduct spinal cord stimulation research for the treatment of chronic pain. He is a licensed physician in the state of Maryland. His e-mail address is Tag.Cutchis@jhuapl.edu.

MARK R. FULLER, an employee of the Department of the Interior, is Director of the Raptor Research and Technical Assistance Center in Boise, Idaho. The Center comprises cooperators in the federal and state governments, universities, and a nongovernmental organization. Projects undertaken by the Center include identifying the natural resource requirements and ecology of birds, including long-distance migrants. Dr. Fuller first used radio telemetry in the early 1970s while studying raptors for his Ph.D. at the University of Minnesota. While an employee of the U.S. Fish and Wildlife Service, Patuxent Wildlife Research Center, in Laurel, Maryland, he joined William Seegar in the early 1980s to develop, test, and apply radio telemetry technology, which included new sensors, to the global tracking of birds. With Dr. Seegar and other colleagues he studies migrating birds and is applying telemetry technology to large mammals such as wild horses and pronghorn antelope. His e-mail address is mfuller@eagle.idbsu.edu.

JOSEPH J. SUTER received a B.S. in physics and mathematics from the Free University of Amsterdam, The Netherlands, in 1977. He received an M.S. in physics from Michigan State University in 1980 and an M.S.E.E. from the University of Maryland in 1983. In 1988, he was awarded a Ph.D. in materials science and engineering from The Johns Hopkins University. Dr. Suter joined APL in 1983 and is a Principal Professional Staff scientist and Supervisor of the Space Department's Time and Frequency Section. He is a member of the IEEE, APS, SPIE, and Sigma Xi. He has served on several IEEE committees on time and frequency technology. Dr. Suter was appointed a research associate in the Department of Materials Science and Engineering of The Johns Hopkins University in 1993. He is the author or co-author of more than 50 technical publications. His e-mail address is Joseph.Suter@jhuapl.edu.

VIPUL BHATNAGAR received a B.S. in electrical engineering from Cornell University in 1991 and an M.S. in electrical engineering from The Johns Hopkins University in 1993. Since joining APL's Space Department in 1991, he has worked as a fiber-optics and radio frequency communications systems engineer. He has also been involved in the postflight performance validation of the radar altimeter aboard the Topex satellite, a collaborative effort with Johns Hopkins Medical School to develop instrumentation for endoscopic image size calibration, and the evaluation of advanced polymer batteries being developed for the U.S. Air Force. His e-mail address is Vipul.Bhatnagar@jhuapl.edu.

JOSEPH G. WALL received a B.S.E.E. from the University of Idaho in 1961. Since 1965, he has been a program manager for the Bird-Borne Transmitter and Search and Rescue Programs at APL. Mr. Wall has also been involved in the Loran-C Navigation System Program and has managed the development of chemical and biological sensors. He has been instrumental in initiating the development of various advanced sensors, among them the gravity gradiometer and a next generation of miniature satellite transmitters. Mr. Wall is also an instructor in The Johns Hopkins University Management Education Program and is currently on the staff of APL's Milton S. Eisenhower Research Center. His e-mail address is Joseph.Wall@jhuapl.edu.

SECTION II

Satellite Telemetry Collar Integration for Mammals
GPS PTT Test Plan and Analysis

CBDCOM SATELLITE TELEMETRY COLLAR INTEGRATION FOR MAMMALS

FINAL REPORT

CONTRACT NUMBER DAMM01-97-M-0093

VENDOR ID NUMBER 0002163

JOSEPH G. WALL
TECHNICAL MANAGEMENT CONSULTANT

JGW
7/98

SUMMARY

A test plan for the evaluation of both the Argos PTT's and the integrated GPS/Argos PTT's was submitted early in the year to initiate program testing and establish base requirements. An outline of the early test plan is provided in Appendix A.

The liaison with the Navy Surface Weapons Center has resulted in the fabrication and delivery of eight integrated GPS/Argos PTT's that have been mounted into collars of several diameters for evaluation on selected species. Initially the collars were mounted on five domestic sheep and one deer on Aberdeen Proving Grounds. A printout of the tracking data is provided in Appendix B. In addition, a collar was also placed on a mountain lion (captive). The integrated units performed exceeding well on the sheep and the deer, but the habitat the mountain lion was housed in created difficulties for the GPS system and multipath caused the system to receive approximately 30 percent of the number of positions expected. The Argos portion of the system performed as expected.

The test plan developed for the commercial PTT's transmitters was to identify the parameters that effect position accuracy. The position accuracy was affected by a number of transmissions received by the satellite during the period of a pass. Effects of the antenna location on the animals and the general environment i.e., shielding due to trees and terrain.

Small satellite-based tracking systems light enough to monitor the positions of selected worldwide species have been in existence since the early 1980's. The Argos based system provided wildlife biologists with valuable tracking and monitoring information. In 1997 the U.S. Army CBDCOM became interested in improving the satellite based tracking capability by adding the position information available from the Global Position Satellite System. By incorporating the GPS received position information into the Argos PTT message data, accurate position information could be added to the measured Argos position, and improved tracking and monitoring of the animals would occur. In addition, the incorporation of a Digital Audio Capture circuit to the system would incorporate the monitoring of behavioral noise thus, assisting in the integration of acoustical information associated with animal behavior.

INTRODUCTION

The use of satellites for tracking wildlife was initiated by the U.S. Army CBDCOM and The Johns Hopkins University Applied Physics Laboratory in 1981[1]. Since the early 1980 demonstrations, several articles have been written describing the operation at the Argos System. In the 1970's the U.S. Airforce developed an improved Satellite Navigation system for the U.S. Military called Global Positioning Satellite System. The Global Positioning Satellite System was designed to provide military aircraft with navigation position accuracy's of ten (10) meters. With the maturity of the system the civilian community has now obtained access to the system and small low power, light weight receivers have been developed. The accuracy of the system for use

by the civilian community is on the order of 100 meters. This position location information is significantly improved over the position accuracy available with the Argos system[2].

In 1997 the Naval Surface Weapons Center (NSWC) at Dahlgren, Virginia was contacted to assist in the development of an integrated Argos PTT/GPS receiver system. NSWC had experience with the Argos System for navigation positioning of buoys to improving navigation positioning with the Global Positioning Satellite System. NSWC had developed several breadboards of the integrated system. In 1997 Dr. Seegar (U.S. Army CBDCOM) and I approached NSWC for assistance in developing a low power, lightweight integrated Argos PTT and GPS receivers mounted in collars for the tracking of endangered species. The Johns Hopkins University Applied Physics Laboratory was also contacted in 1997 to develop an advanced sensor to assist in the interpretation of acoustical information to link time and location to discrete animal behavior. The digital audio capture unit was breadboarded in 1998 and is presently undergoing laboratory testing.

CONTRACT STATEMENT OF WORK

The Contract Statement of Work (Appendix B) required effort on the following tasks:

a) Develop a test plan for the evaluation of purchased Argos PTT's
b) Modify the test plan to evaluate the performance of the integrated Argos PTT's and the GPS receivers
c) Provide technical liaison with the Naval Surface Weapons Center during the development of the Argos PTT's and GPS receiver integrated units for tracking wildlife. Assist in the evaluation of the test date prior to field deployment of the integrated units. Assist in the evaluation of the field test data after the units are deployed on selected wildlife and domestic animals
d) Provide technical liaison to The Johns Hopkins University Applied Physics Laboratory during the development of the digital audio capture and control unit designed to identify and record specific sounds (behavioral noise) made by a specie (wolf initially). This intention for the device is to assist in identifying and recording the animal activity i.e., eating, stress, anger, etc.
e) Evaluate the field test data as recovered by the prototype tracking devices
f) Prepare a final report

SYSTEM TEST PLANS

A test plan was developed for the evaluation of commercial Argos PTT's and NSWC PTT's Argos/ GPS receivers. The purpose of the test plan was to determine factors that affected location accuracies associated with the Argos system and the Argos PTT's when placed on selected wildlife species. The system factors to be investigated were:

a) Number of transmissions received by the Satellite during the period of a satellite pass transmission rate
b) Location of antenna on the selected specie
c) Radiated transmitter power

In addition, a test plan (Appendix A) for the integrated Argos PTT and GPS receiver. The system factors to be investigated were:

a) Number of GPS positions obtained during an Argos satellite pass
b) Antenna location of the GPS receiver antenna
c) The tracking and monitoring performance of the integrated system

PROGRAM RESULTS

A series of tests were run on domestic sheep located near Aberdeen Proving Grounds. The purpose of these tests were to identify the baseline parameters that affect the Argos PTT positioning capability. Although most of the parameters have been identified by many other experimenters the purpose for these tests were to confirm a baseline prior to placing collars in the field. The parameters that affected the Argos location capability were:

a) number of transmissions per satellite pass
b) oscillator stability turn on time
c) antenna location
d) radiated power

Several factors affected the Argos units. Transmission rates of 60 seconds are infrequent enough to give accurate positions for short duration satellite passes. In addition, the radiated power of a quarter watt also affects the number of Doppler measurements that will be received by the satellite as well as the position of the antenna on the specie. Early PTT's transmitted at thirty second intervals and radiated a watt of power, this significantly improved the satellite's ability to measure the Doppler shift and determine accurate positions for the PTT's. The ninety second rate presently edicted by Argos (to increase the user base) significantly reduces the number of transmissions available during a satellite pass.

A printout of the data recovery format is included in Appendix C. Identified in the format are the transmitter ID, the satellite ID letter, the quality of fix (A, B, 0, 1, 2, and 3 with A being the poorest fix and 3 being in the 1 - 3 km range). Date of the fix, time, position lat, position longitude, the global positioning data date, time, GPS latitude, GPS longitude calculated GPS altitude of the receiver, and a position estimate quality index. Appendix D is a copy of the satellite coverage (Alert Table) for the Stewartstown test site.

When reviewing the data and comparing Argos positions vs GPS positions the following factors must be taken into account:

a) Argos positions will not be as accurate as GPS positions
b) GPS position may be the result of old data stored in memory prior to a Argos pass and thus may relate back in time. One must be aware of the GPS position measurement time vs the Argos position measurement time.

In comparing the performance of early transmitters for the tracking of wildlife the transmission rates were at a rate of one burst every 30 seconds, and the power levels were at one watt. By decreasing the data transmission rate to 90 seconds the available number of Doppler measurements on a good unobstructed pass with an evaluation angle (45 degrees) you would only get about 7 Doppler measurement. This is not sufficient to give position fixed in the 1 to 3 km accuracy. Assuming a 60 second data rate transmission, at one half watt with an elevation angle of 45 degrees and clear line of site to the satellite. Approximately 12 to 15 Doppler intervals could be measured, and position fixes of 1 to 3 km could be achieved. Reducing the radiated power to a ¼ watt and decreasing the transmission time to 90 seconds, the number of measured Doppler counts decreased significantly to approximately 3 to 6 on a good pass. Another factor is the whip antenna location on the specie being tracked. The normal characteristic of a whip antenna is to have a doughnut shape with a pattern null or a hole directly overhead, where the signal would be blanked out. This will also cause the loss of Doppler measurements.

The operation of the Argos/GPS system with the transmission data rate established the system performance can be evaluated by looking at the following:

1) the time of closest approach of the satellite
2) the elevation angle at closest approach. Elevation angles less than 5 degrees and greater than 85 degrees, may result in the position locations that are not realistic and should be ignored. This does not mean Argos may not recover some Doppler measurements it just means the position locations can be very misleading.

The above discussion does not deal with interfering transmissions from other transmitters in the area, which may cause missed Doppler measurements.

In early April the eight Argos GPS collars were provided by NSWC for field trails. Five of the units were initially placed on domestic sheep. One unit was placed on a free ranging deer on the Aberdeen Proving Ground one unit was shipped to Colorado for placement on a captive mountain lion. The results of the test demonstrated the system performance to be as expected. The average number of Argos Doppler measurements on a good (above 45° elev.) was approximately six (6), which provided at least four (4) position locations from The Global Positioning System. During this process it became

apparent, as in the lion tracking, that the GPS receiver was affected by multipath problems due to the surrounding wire fence, as well as shadowing from the environment (when the lion was housed in a den); even though the Argos Doppler measurements were not effected by the fence or the environment. The collars were then removed from the domestic sheep, deer, and the mountain lion. Three systems were outfitted with new batteries and shipped to White Sands, New Mexico for the tracking of wild oryx. Plots of the positions obtained by these units are enclosed in Appendices D1 and D2. Appendix D1 is a plot of GPS positions only for oryx on the White Sands Missile Range. Appendix D2 is a plot of both GPS and Argos positions. Even though a limited number of Doppler positions for the Argos transmitter (90 second transmission rate) were measured they appeared to have good correlation with the GPS positions. The performance of the overall system has been enlightening and provides improved information on tracking and monitoring endangered wild life. A recommendation for future systems is to maintain a minimum of one third of a watt of radiated power and to use sixty seconds (60) as the transmission rate.

Acknowledgements:

The author wishes to thank the following for their support and assistance: Dr. W. Seegar (SCBCOMM), Mr. J. Dayton (EARTHSPAN), Mr. M. Bramer (EARTHSPAN), Dr. P. Cutchis (JHUAPL), Dr. J. Suter (JHUAPL), Mr. D. Evans (NSWC), Mr. D. LaSage (NSWC) and Mr. P. Schlereth (NSWC).

APPENDIX A

OUTLINE FOR TESTING ARGOS PTT'S
PROPOSED DRAFT TEST PLAN – SATELLITE TELEMETRY COLLAR INTEGRATION FOR MAMMALS

1. To confirm the basic position accuracy of the Argos transmitters.

    a. Identify operational satellites
    b. Take a series of passes on a known point – establish a mark position
    c. Orient the antenna so that all four quadrants are covered.
    d. Identify North going , South going passes
    e. Investigate the symmetry of the Doppler counts as received by Service Argos (this will provide a clue as to transmitter performance)
    f. Record the satellites time of closest approach and elevation angle

2. A table should be created (see example shown in Appendix) with the following parameters.

    a. Date
    b. Time of pass
    c. Satellite time of closest approach
    d. Satellite elevation angle
    e. Estimated time satellite in view
    f. Number of Doppler counts received by Service Argos
    g. Bench mark position – latitude, longitude
    h. Argos position fix latitude, longitude
    i. Number of GPS fixes, position of each fix
    j. GPS antenna or orientation
    k. Argos antenna orientation
    l. Argos transmitter I.D. number
    m. From message monitor estimate radiated power and from Argos obtain measured (received) signal levels at the satellite

3. A series of satellite passes should be taken for 8 days, 24 hours a day. System performance should be verified.

4. Now a series of passes (8 days, 24 hours a day) moving the antenna locations on the host platform. Starting with the antennas pointing vertical, then at angles of 60 degrees off the vertical.

5. Now a similar series of tests should be done in dense vegetation, under dense forest. These series of tests should allow us to evaluate the Argos transmitter power, oscillator stability, and antenna location.

J.G. Wall 9/8/97

APPENDIX A

6. Technical concerns:

    a. There may not be enough data transmissions with the present Argos format i.e., not enough time to create a good Doppler curve i.e., 60 second intervals, 90 second intervals
    b. What is the true radiated power?
    c. Use post processing to delete bad Doppler counts and improve position locations
    d. Is the host body interfering with the amount of radiated power?

APPENDIX B

STATEMENT OF WORK
SATELLITE TELEMETRY COLLAR INTEGRATION FOR MAMMALS

Scope: The contractor shall work with both private sector and Government personnel to develop and adapt remote tracking monitoring hardware doe use on free ranging animals. The purpose of the effort is to develop a capability to track and monitor free ranging organisms to establish natural resource management plans for the military.

Applicable Documents: None

Objective: The Contractor shall, as an independent Contractor and not as an agent of the Government, complete the following:

a. The Contractor shall manage the integration of Government furnished electronics (no more than 10 telemetry tracking collars) into collar attachments for medium to large sized mammals such as wolves and antelope.

b. The Contractor shall be responsible for the development of a set of criterion to test and evaluate the transmission performance of the Platform Transmitter Terminals (PTT's) to the Argos System. The Contractor shall also develop a set of criterion, test the reception of Global Positioning System (GPS) signals under a variety of different field conditions to simulate the activities of free ranging organisms. The Contractor shall also interface with The Johns Hopkins University Applied Research Laboratory to develop the test criterion for the satellite tracked and monitored PTT.

c. The Contractor shall also interface in the program development to field the prototype units at several military installations to be determined by the Government. The Contractor shall participate in field operations. Specifically, the Contractor shall interface with the Government in the appropriate application of the newly developed collars to the animals selected to be tracked and monitored on the designated military installations. The Contractor shall also interface in the review and analysis of field data derived from the new prototype tracking devices.

d. The Contractor shall provide at the end of the performance period a final report in the Contractor's format to define the performance of the hardware under both test and field conditions. The Government will provide to the Contractor, based upon the tests, the type of data and analysis required in the report.

Period of Performance: The period of performance, to include the submission of a final report is 365 days from the date of contract award.

Government Furnished Equipment: The Government will provide to the Contractor no more than 10 tracking collars currently located at the Naval Surface Warfare Center in Dahlgren, VA.

Security: This Purchase Order is unclassified

5/11/98

APPENDIX C

ID	PROG	SAT	LC	Arg Date	Arg Time	Arg Lat	Arg Lon	INT_DATE	INT_TIME	GPS_DATE	GPS Lat	GPS Lon	ALT	QUAL
05707	00381	D	A	4/4/98	09:33:17	39.733	-76.599	4/4/98	09:33:17	4/3/98 7:27	39.7453	-76.5938	77	51m-75m 3N
05707	00381	H	2	4/4/98	14:41:09	39.475	-76.497	4/4/98	14:44:09	4/3/98 19:40	39.7477	-76.5958	61	26m-50m 3N
05707	00381	J	A	4/5/98	19:45:20	39.492	-76.511	4/5/98	19:46:50	4/4/98 1:47	39.7488	-76.5958	81	51m-75m 3N
05707	00381	J	B	4/5/98	18:04:50	39.488	-76.545	4/5/98	18:06:20	4/4/98 7:52	39.7480	-76.5953	56	26m-50m 3N
05707	00381	J	A	4/5/98	19:45:20	39.492	-76.511	4/5/98	19:42:20	4/4/98 14:09	39.4873	-76.5263	464	0m-26m 4N
05707	00381	J	A	4/5/98	19:45:20	39.492	-76.511	4/5/98	19:42:20	4/4/98 20:10	39.4865	-76.5270	97	26m-50m 3N
05707	00381	J	B	4/5/98	18:04:50	39.488	-76.545	4/5/98	18:06:20	4/5/98 2:17	39.4867	-76.5268	135	26m-50m 3N
05707	00381	D	A	4/6/98	21:48:40	39.487	-76.540	4/6/98	21:48:40	4/5/98 8:23	39.4892	-76.5280	167	51m-75m 3N
05707	00381	J	B	4/5/98	18:04:50	39.488	-76.545	4/5/98	18:03:20	4/5/98 14:33	39.4865	-4.1285	369	26m-50m 3N
05707	00381	D	A	4/6/98	21:48:40	39.487	-76.540	4/6/98	21:50:10	4/5/98 20:38	39.4863	-76.5270	62	51m-75m 3N
05707	00381	D	A	4/6/98	21:48:40	39.487	-76.540	4/6/98	21:48:40	4/6/98 8:53	39.4862	-76.5253	153	51m-75m 3N
05707	00381	D	A	4/6/98	21:48:40	39.487	-76.540	4/6/98	21:47:10	4/6/98 14:58	39.4863	-4.1284	137	51m-75m 3N
05707	00381	D	3	4/8/98	11:24:21	39.496	-76.578	4/8/98	11:27:21	4/6/98 21:03	39.4845	-76.5263	65	51m-75m 3N
05707	00381	H	B	4/9/98	13:37:26	39.485	-76.487	4/9/98	13:35:56	4/7/98 3:15	39.2645	-76.6640	149	51m-75m 3N
05707	00381	H	B	4/9/98	15:20:56	39.457	-76.505	4/9/98	15:19:26	4/7/98 9:21	39.4880	-4.1283	78	76m-100m 3N
05707	00381	J	B	4/9/98	17:20:45	39.493	-76.545	4/9/98	17:19:15	4/7/98 21:34	39.4867	-76.5268	132	51m-75m 4N
05707	00381	D	3	4/8/98	11:24:21	39.496	-76.578	4/8/98	11:25:51	4/8/98 3:39	39.4867	-76.5267	112	0m-26m 3N
05707	00381	J	B	4/9/98	17:20:45	39.493	-76.545	4/9/98	17:22:15	4/8/98 9:49	39.4873	-76.5270	101	26m-50m 3N
05707	00381	^J	B	4/9/98	17:20:45	39.493	-76.545	4/9/98	17:22:15	4/8/98 22:03	39.4870	-76.5278	144	26m-50m 3N
05707	00381	^H	B	4/9/98	15:20:56	39.457	-76.505	4/9/98	15:22:26	4/9/98 4:16	39.4870	-76.5272	630	76m-100m 4N
05707	00381	J	B	4/10/98	20:30:00	39.470	-76.502	4/10/98	20:30:45	4/9/98 10:16	39.4875	-76.5277	182	26m-50m 2N
05707	00381	J	B	4/10/98	20:30:00	39.470	-76.502	4/10/98	20:30:45	4/9/98 16:25	39.4870	-76.5268	107	0m-26m 4N
05707	00381	^H	B	4/12/98	02:21:07	39.526	-76.505	4/12/98	02:23:22	4/9/98 22:32	39.4872	-76.5273	90	26m-50m 3N
05707	00381	D	A	4/10/98	22:02:15	39.479	-76.554	4/10/98	22:00:45	4/10/98 4:46	39.4867	-76.5272	578	26m-50m 3N
05707	00381	D	A	4/10/98	22:02:15	39.479	-76.554	4/10/98	21:59:15	4/10/98 10:44	39.4858	-76.5258	91	51m-75m 3N
05707	00381	H	B	4/12/98	02:21:07	39.526	-76.505	4/12/98	02:18:52	4/11/98 5:13	39.4870	-76.5263	426	26m-50m 3N
05707	00381	^J	B	4/13/98	06:49:54	39.496	-76.541	4/13/98	06:49:09	4/11/98 11:13	39.4873	-76.5277	69	26m-50m 3N
05707	00381	J	B	4/13/98	06:49:54	39.496	-76.541	4/13/98	06:50:39	4/11/98 23:27	39.4867	-76.5263	215	26m-50m 3N
05707	00381	D	3	4/13/98	12:55:40	39.484	-76.523	4/13/98	12:55:40	4/12/98 5:42	39.4877	-76.5268	488	51m-75m 3N
05707	00381	H	B	4/14/98	14:22:17	39.574	-75.367	4/14/98	14:21:32	4/12/98 11:45	39.4877	-76.5260	229	26m-50m 3N
05707	00381	H	B	4/14/98	14:22:17	39.574	-75.367	4/14/98	14:23:02	4/12/98 17:56	39.4865	-4.1284	561	51m-75m 3N
05707	00381	J	3	4/14/98	18:05:47	39.485	-76.530	4/14/98	18:05:02	4/12/98 23:59	39.4870	-76.5253	359	51m-75m 3N
05707	00381	D	A	4/14/98	12:32:31	39.482	-76.512	4/14/98	12:34:01	4/13/98 6:05	39.4883	-76.5275	366	26m-50m 4N
05707	00381	D	A	4/14/98	12:32:31	39.482	-76.512	4/14/98	12:31:01	4/13/98 12:10	39.4868	-76.5273	67	26m-50m 3N

Sheet 1 of 3.

APPENDIX C

A SAMPLE OF RECOVERED ARGOS INFORMATION
TRANSMITTER #5407

ID	PROG	SAT	LC	Arg Date	Arg Time	Arg Lat	Arg Lon	INT_DATE	INT_TIME	GPS_DATE	GPS Lat	GPS Lon	ALT	QUAL
05707	00381	^D	3	4/15/98	21:51:54	39.481	-76.547	4/15/98	21:51:09	4/14/98 0:24	39.4877	-76.5260	77	26m-50m 3N
05707	00381	H	B	4/14/98	14:22:17	39.574	-75.367	4/14/98	14:23:02	4/14/98 6:30	39.4878	-76.5260	86	51m-75m 3N
05707	00381	H	B	4/14/98	14:22:17	39.574	-75.367	4/14/98	14:21:32	4/14/98 12:36	39.4873	-76.5263	70	26m-50m 4N
05707	00381	H	0	4/16/98	01:30:07	39.515	-76.446	4/16/98	01:32:22	4/14/98 18:46	39.4873	-76.5262	94	51m-75m 3N
05707	00381	D	3	4/15/98	21:51:54	39.481	-76.547	4/15/98	21:52:39	4/15/98 0:54	39.4875	-76.5272	115	26m-50m 4N
05707	00381	D	3	4/15/98	21:51:54	39.481	-76.547	4/15/98	21:51:09	4/15/98 7:02	39.4873	-76.5265	264	51m-75m 3N
05707	00381	J	3	4/17/98	07:47:31	39.493	-76.559	4/17/98	07:46:46	4/15/98 19:12	39.4860	-76.5272	111	26m-50m 3N
05707	00381	J	B	4/17/98	09:27:55	39.485	-76.509	4/17/98	09:29:25	4/16/98 1:26	39.4867	-76.5262	358	51m-75m 3N
05707	00381	^J	3	4/19/98	20:30:55	39.489	-76.516	4/19/98	20:27:55	4/16/98 7:32	39.4875	-76.5263	270	26m-50m 4N
05707	00381	J	3	4/19/98	20:30:55	39.489	-76.516	4/19/98	20:29:25	4/16/98 13:37	39.4865	-76.5260	218	26m-50m 4N
05707	00381	J	B	4/19/98	18:49:40	39.475	-76.565	4/19/98	18:50:25	4/16/98 19:41	39.4870	-76.5272	86	26m-50m 4N
05707	00381	H	B	4/18/98	15:06:05	39.464	-76.369	4/18/98	15:04:35	4/17/98 1:46	39.4875	-76.5263	63	51m-75m 4N
05707	00381	H	B	4/19/98	18:49:40	39.475	-76.565	4/19/98	18:48:55	4/17/98 7:57	39.4878	-76.5277	126	51m-75m 3N
05707	00381	J	B	4/19/98	18:49:40	39.475	-76.565	4/19/98	18:50:25	4/17/98 14:05	39.4872	-76.5288	157	51m-75m 3N
05707	00381	H	A	4/21/98	02:09:15	39.489	-76.509	4/21/98	02:12:15	4/17/98 20:10	39.4847	-76.5272	68	26m-50m 3N
05707	00381	J	3	4/22/98	08:34:20	39.475	-76.480	4/22/98	08:31:20	4/19/98 8:55	39.4875	-76.5265	332	51m-75m 3N
05707	00381	^D	1	4/20/98	21:41:30	39.483	-76.564	4/20/98	21:42:15	4/19/98 21:10	39.4912	-4.1284	232	51m-75m 3N
05707	00381	D	1	4/20/98	21:41:30	39.483	-76.564	4/20/98	21:37:45	4/19/98 21:10	39.4858	-4.1284	232	51m-75m 3N
05707	00381	J	3	4/22/98	08:34:20	39.475	-76.480	4/22/98	08:32:50	4/19/98 21:10	39.4858	-4.1284	232	51m-75m 3N
05707	00381	H	A	4/21/98	02:09:15	39.489	-76.509	4/21/98	02:09:15	4/20/98 15:32	39.4813	-76.5262	392	76m-100m 4N
05707	00381	D	3	4/23/98	12:36:19	39.482	-76.509	4/23/98	12:36:19	4/20/98 21:34	39.4863	-76.5275	173	0m-26m 4N
05707	00381	J	B	4/23/98	18:08:05	39.460	-76.436	4/23/98	18:07:20	4/21/98 3:49	39.4895	-4.1284	478	51m-75m 3N
05707	00381	J	B	4/23/98	18:08:05	39.460	-76.436	4/23/98	18:08:50	4/21/98 15:59	39.4862	-76.5263	243	26m-50m 3N
05707	00381	H	3	4/25/98	01:19:02	39.497	-76.475	4/25/98	01:19:02	4/21/98 22:02	39.4875	-76.5268	80	26m-50m 3N
05707	00381	J	1	4/24/98	19:36:31	39.492	-76.478	4/24/98	19:32:01	4/22/98 4:08	39.4872	-4.1285	94	26m-50m 4N
05707	00381	J	1	4/24/98	19:36:31	39.492	-76.478	4/24/98	19:38:01	4/22/98 22:32	39.4863	-76.5262	137	0m-26m 3N
05707	00381	H	A	4/26/98	01:04:16	39.518	-76.369	4/26/98	01:05:46	4/23/98 4:41	39.4863	-76.5278	294	26m-50m 3N
05707	00381	J	B	4/23/98	18:08:05	39.460	-76.436	4/23/98	18:08:50	4/23/98 10:51	39.4873	-76.5260	522	0m-26m 4N
05707	00381	J	B	4/24/98	17:56:46	39.463	-76.524	4/24/98	17:59:01	4/23/98 16:53	39.4835	-76.5268	74	51m-75m 3N
05707	00381	J	B	4/24/98	17:56:46	39.463	-76.524	4/24/98	17:54:31	4/23/98 23:01	39.4873	-4.1285	105	26m-50m 3N
05707	00381	H	3	4/25/98	01:19:02	39.497	-76.475	4/25/98	01:19:02	4/24/98 11:20	39.4863	-76.5262	557	26m-50m 2N
05707	00381	J	2	4/26/98	07:48:40	39.492	-76.561	4/26/98	07:46:25	4/25/98 23:55	39.4873	-76.5272	128	26m-50m 4N
05707	00381	J	B	4/28/98	18:52:36	39.480	-76.624	4/28/98	18:51:51	4/27/98 0:25	39.4873	-76.5263	167	26m-50m 4N
05707	00381	J	A	4/27/98	07:35:11	39.489	-76.551	4/27/98	07:37:26	4/27/98 6:34	39.4883	-76.5260	356	51m-75m 3N

(7)

APPENDIX C

ID	PROG	SAT	LC	Arg Date	Arg Time	Arg Lat	Arg Lon	INT_DATE	INT_TIME	GPS_DATE	GPS Lat	GPS Lon	ALT	QUAL
05707	00381	D	A	4/4/98	09:33:17	39.733	-76.599	4/4/98	09:33:17	4/3/98 7:27	39.7453	-76.5938	77	51m-75m 3N
05707	00381	H	2	4/4/98	14:41:09	39.475	-76.497	4/4/98	14:44:09	4/3/98 19:40	39.7477	-76.5958	61	26m-50m 3N
05707	00381	J	A	4/5/98	19:45:20	39.492	-76.511	4/5/98	19:46:50	4/4/98 1:47	39.7488	-76.5958	81	51m-75m 3N
05707	00381	J	B	4/5/98	18:04:50	39.488	-76.545	4/5/98	18:06:20	4/4/98 7:52	39.7480	-76.5953	56	26m-50m 3N
05707	00381	J	A	4/5/98	19:45:20	39.492	-76.511	4/5/98	19:42:20	4/4/98 14:09	39.4873	-76.5263	464	0m-26m 4N
05707	00381	J	A	4/5/98	19:45:20	39.492	-76.511	4/5/98	19:42:20	4/4/98 20:10	39.4865	-76.5270	97	26m-50m 3N
05707	00381	J	B	4/5/98	18:04:50	39.488	-76.545	4/5/98	18:06:20	4/5/98 2:17	39.4867	-76.5268	135	26m-50m 3N
05707	00381	D	A	4/6/98	21:48:40	39.487	-76.540	4/6/98	21:48:40	4/5/98 8:23	39.4892	-76.5280	167	51m-75m 3N
05707	00381	J	B	4/5/98	18:04:50	39.488	-76.545	4/5/98	18:03:20	4/5/98 14:33	39.4865	-4.1285	369	26m-50m 3N
05707	00381	D	A	4/6/98	21:48:40	39.487	-76.540	4/6/98	21:50:10	4/5/98 20:38	39.4863	-76.5270	62	51m-75m 3N
05707	00381	D	A	4/6/98	21:48:40	39.487	-76.540	4/6/98	21:48:40	4/6/98 8:53	39.4862	-76.5253	153	51m-75m 3N
05707	00381	D	A	4/6/98	21:48:40	39.487	-76.540	4/6/98	21:47:10	4/6/98 14:58	39.4863	-4.1284	137	51m-75m 3N
05707	00381	D	3	4/8/98	11:24:21	39.496	-76.578	4/8/98	11:27:21	4/6/98 21:03	39.4845	-76.5263	65	51m-75m 3N
05707	00381	H	B	4/9/98	13:37:26	39.485	-76.487	4/9/98	13:35:56	4/7/98 3:15	39.2645	-76.6640	149	51m-75m 3N
05707	00381	H	B	4/9/98	15:20:56	39.457	-76.505	4/9/98	15:19:26	4/7/98 9:21	39.4880	-4.1283	78	76m-100m 3N
05707	00381	J	B	4/9/98	17:20:45	39.493	-76.545	4/9/98	17:19:15	4/7/98 21:34	39.4867	-76.5268	132	51m-75m 4N
05707	00381	D	3	4/8/98	11:24:21	39.496	-76.578	4/8/98	11:25:51	4/8/98 3:39	39.4867	-76.5267	112	0m-26m 3N
05707	00381	J	B	4/9/98	17:20:45	39.493	-76.545	4/9/98	17:22:15	4/8/98 9:49	39.4873	-76.5270	101	26m-50m 3N
05707	00381	^J	B	4/9/98	17:20:45	39.493	-76.545	4/9/98	17:22:15	4/8/98 22:03	39.4870	-76.5278	144	26m-50m 3N
05707	00381	^H	B	4/9/98	15:20:56	39.457	-76.505	4/9/98	15:22:26	4/9/98 4:16	39.4870	-76.5272	630	76m-100m 4N
05707	00381	J	B	4/10/98	20:30:00	39.470	-76.502	4/10/98	20:30:45	4/9/98 10:16	39.4875	-76.5277	182	26m-50m 2N
05707	00381	J	B	4/10/98	20:30:00	39.470	-76.502	4/10/98	20:30:45	4/9/98 16:25	39.4870	-76.5268	107	0m-26m 4N
05707	00381	^H	B	4/12/98	02:21:07	39.526	-76.505	4/12/98	02:23:22	4/9/98 22:32	39.4872	-76.5273	90	26m-50m 3N
05707	00381	D	A	4/10/98	22:02:15	39.479	-76.554	4/10/98	22:00:45	4/10/98 4:46	39.4867	-76.5272	578	26m-50m 3N
05707	00381	D	A	4/10/98	22:02:15	39.479	-76.554	4/10/98	21:59:15	4/10/98 10:44	39.4858	-76.5258	91	51m-75m 3N
05707	00381	H	B	4/12/98	02:21:07	39.526	-76.505	4/12/98	02:18:52	4/11/98 5:13	39.4870	-76.5263	426	26m-50m 3N
05707	00381	^J	B	4/13/98	06:49:54	39.496	-76.541	4/13/98	06:49:09	4/11/98 11:13	39.4873	-76.5277	69	26m-50m 3N
05707	00381	J	B	4/13/98	06:49:54	39.496	-76.541	4/13/98	06:50:39	4/11/98 23:27	39.4867	-76.5263	215	26m-50m 3N
05707	00381	D	3	4/13/98	12:55:40	39.484	-76.523	4/13/98	12:55:40	4/12/98 5:42	39.4877	-76.5268	488	51m-75m 3N
05707	00381	H	B	4/14/98	14:22:17	39.574	-75.367	4/14/98	14:21:32	4/12/98 11:45	39.4877	-76.5260	229	26m-50m 3N
05707	00381	H	B	4/14/98	14:22:17	39.574	-75.367	4/14/98	14:23:02	4/12/98 17:56	39.4865	-4.1284	561	51m-75m 3N
05707	00381	J	3	4/14/98	18:05:47	39.485	-76.530	4/14/98	18:05:02	4/12/98 23:59	39.4870	-76.5253	359	51m-75m 3N
05707	00381	D	A	4/14/98	12:32:31	39.482	-76.512	4/14/98	12:34:01	4/13/98 6:05	39.4883	-76.5275	366	26m-50m 4N
05707	00381	D	A	4/14/98	12:32:31	39.482	-76.512	4/14/98	12:31:01	4/13/98 12:10	39.4868	-76.5273	67	26m-50m 3N

APPENDIX C

A SAMPLE OF RECOVERED ARGOS INFORMATION
TRANSMITTER #5407

ID	PROG	SAT	LC	Arg Date	Arg Time	Arg Lat	Arg Lon	INT_DATE	INT_TIME	GPS_DATE	GPS Lat	GPS Lon	ALT	QUAL
05707	00381	^D	3	4/15/98	21:51:54	39.481	-76.547	4/15/98	21:51:09	4/14/98 0:24	39.4877	-76.5260	77	26m-50m 3N
05707	00381	H	B	4/14/98	14:22:17	39.574	-75.367	4/14/98	14:23:02	4/14/98 6:30	39.4878	-76.5260	86	51m-75m 3N
05707	00381	H	B	4/14/98	14:22:17	39.574	-75.367	4/14/98	14:21:32	4/14/98 12:36	39.4873	-76.5263	70	26m-50m 4N
05707	00381	H	0	4/16/98	01:30:07	39.515	-76.446	4/16/98	01:32:22	4/14/98 18:46	39.4873	-76.5262	94	51m-75m 3N
05707	00381	D	3	4/15/98	21:51:54	39.481	-76.547	4/15/98	21:52:39	4/15/98 0:54	39.4875	-76.5272	115	26m-50m 4N
05707	00381	D	3	4/15/98	21:51:54	39.481	-76.547	4/15/98	21:51:09	4/15/98 7:02	39.4873	-76.5265	264	51m-75m 3N
05707	00381	J	3	4/17/98	07:47:31	39.493	-76.559	4/17/98	07:46:46	4/15/98 19:12	39.4860	-76.5272	111	26m-50m 3N
05707	00381	J	B	4/17/98	09:27:55	39.485	-76.509	4/17/98	09:29:25	4/16/98 1:26	39.4867	-76.5262	358	51m-75m 3N
05707	00381	^J	3	4/19/98	20:30:55	39.489	-76.516	4/19/98	20:27:55	4/16/98 7:32	39.4875	-76.5263	270	26m-50m 4N
05707	00381	J	3	4/19/98	20:30:55	39.489	-76.516	4/19/98	20:29:25	4/16/98 13:37	39.4865	-76.5260	218	26m-50m 4N
05707	00381	J	B	4/19/98	18:49:40	39.475	-76.565	4/19/98	18:50:25	4/16/98 19:41	39.4870	-76.5272	86	26m-50m 4N
05707	00381	H	B	4/18/98	15:06:05	39.464	-76.369	4/18/98	15:04:35	4/17/98 1:46	39.4875	-76.5263	63	51m-75m 4N
05707	00381	H	B	4/19/98	18:49:40	39.475	-76.565	4/19/98	18:48:55	4/17/98 7:57	39.4878	-76.5277	126	51m-75m 3N
05707	00381	J	B	4/19/98	18:49:40	39.475	-76.565	4/19/98	18:50:25	4/17/98 14:05	39.4872	-76.5288	157	51m-75m 3N
05707	00381	H	A	4/21/98	02:09:15	39.489	-76.509	4/21/98	02:12:15	4/17/98 20:10	39.4847	-76.5272	68	26m-50m 3N
05707	00381	J	3	4/22/98	08:34:20	39.475	-76.480	4/22/98	08:31:20	4/19/98 8:55	39.4875	-76.5265	332	51m-75m 3N
05707	00381	^D	1	4/20/98	21:41:30	39.483	-76.564	4/20/98	21:42:15	4/19/98 21:10	39.4912	-4.1284	232	51m-75m 3N
05707	00381	D	1	4/20/98	21:41:30	39.483	-76.564	4/20/98	21:37:45	4/19/98 21:10	39.4858	-4.1284	232	51m-75m 3N
05707	00381	J	3	4/22/98	08:34:20	39.475	-76.480	4/22/98	08:32:50	4/19/98 21:10	39.4858	-4.1284	232	51m-75m 3N
05707	00381	H	A	4/21/98	02:09:15	39.489	-76.509	4/21/98	02:09:15	4/20/98 15:32	39.4813	-76.5262	392	76m-100m 4N
05707	00381	D	3	4/23/98	12:36:19	39.482	-76.509	4/23/98	12:36:19	4/20/98 21:34	39.4863	-76.5275	173	0m-26m 4N
05707	00381	J	B	4/23/98	18:08:05	39.460	-76.436	4/23/98	18:07:20	4/21/98 3:49	39.4895	-4.1284	478	51m-75m 3N
05707	00381	J	B	4/23/98	18:08:05	39.460	-76.436	4/23/98	18:08:50	4/21/98 15:59	39.4862	-76.5263	243	26m-50m 3N
05707	00381	H	3	4/25/98	01:19:02	39.497	-76.475	4/25/98	01:19:02	4/21/98 22:02	39.4875	-76.5268	80	26m-50m 3N
05707	00381	J	1	4/24/98	19:36:31	39.492	-76.478	4/24/98	19:32:01	4/22/98 4:08	39.4872	-4.1285	94	26m-50m 4N
05707	00381	J	1	4/24/98	19:36:31	39.492	-76.478	4/24/98	19:38:01	4/22/98 22:32	39.4863	-76.5262	137	0m-26m 3N
05707	00381	H	A	4/26/98	01:04:16	39.518	-76.369	4/26/98	01:05:46	4/23/98 4:41	39.4863	-76.5278	294	26m-50m 3N
05707	00381	J	B	4/23/98	18:08:05	39.460	-76.436	4/23/98	18:08:50	4/23/98 10:51	39.4873	-76.5260	522	0m-26m 4N
05707	00381	J	B	4/24/98	17:56:46	39.463	-76.524	4/24/98	17:59:01	4/23/98 16:53	39.4835	-76.5268	74	51m-75m 3N
05707	00381	J	B	4/24/98	17:56:46	39.463	-76.524	4/24/98	17:54:31	4/23/98 23:01	39.4873	-4.1285	105	26m-50m 3N
05707	00381	H	3	4/25/98	01:19:02	39.497	-76.475	4/25/98	01:19:02	4/24/98 11:20	39.4863	-76.5262	557	26m-50m 2N
05707	00381	J	2	4/26/98	07:48:40	39.492	-76.561	4/26/98	07:46:25	4/25/98 23:55	39.4873	-76.5272	128	26m-50m 4N
05707	00381	J	B	4/28/98	18:52:36	39.480	-76.624	4/28/98	18:51:51	4/27/98 0:25	39.4873	-76.5263	167	26m-50m 4N
05707	00381	J	A	4/27/98	07:35:11	39.489	-76.551	4/27/98	07:37:26	4/27/98 6:34	39.4883	-76.5260	356	51m-75m 3N

ID	PROG	SAT	LC	Arg Date	Arg Time	Arg Lat	Arg Lon	INT_DATE	INT_TIME	GPS_DATE	GPS Lat	GPS Lon	ALT	COURSE	SPEED	QUAL
05707	00381	D	A	4/4/98	09:33:17	39.733	-76.599	4/4/98	09:33:17	4/3/98 7:27	39.7453	-76.5938	77	0	0	1m-75m 3
05707	00381	H	2	4/4/98	14:41:09	39.475	-76.497	4/4/98	14:44:09	4/3/98 19:40	39.7477	-76.5958	61	0	0	6m-50m 3
05707	00381	J	A	4/5/98	19:45:20	39.492	-76.511	4/5/98	19:46:50	4/4/98 1:47	39.7488	-76.5958	81	0	0	1m-75m 3
05707	00381	J	B	4/5/98	18:04:50	39.488	-76.545	4/5/98	18:06:20	4/4/98 7:52	39.7480	-76.5953	56	0	0	6m-50m 3
05707	00381	J	A	4/5/98	19:45:20	39.492	-76.511	4/5/98	19:42:20	4/4/98 14:09	39.4873	-76.5263	464	0	0	0m-26m 4N
05707	00381	J	A	4/5/98	19:45:20	39.492	-76.511	4/5/98	19:42:20	4/4/98 20:10	39.4865	-76.5270	97	0	0	6m-50m 3
05707	00381	J	B	4/5/98	18:04:50	39.488	-76.545	4/5/98	18:06:20	4/5/98 2:17	39.4867	-76.5268	135	0	0	6m-50m 3
05707	00381	D	A	4/6/98	21:48:40	39.487	-76.540	4/6/98	21:48:40	4/5/98 8:23	39.4892	-76.5280	167	0	0	1m-75m 3
05707	00381	J	B	4/5/98	18:04:50	39.488	-76.545	4/5/98	18:03:20	4/5/98 14:33	39.4865	-4.1285	369	0	0	6m-50m 3
05707	00381	D	A	4/6/98	21:48:40	39.487	-76.540	4/6/98	21:50:10	4/5/98 20:38	39.4863	-76.5270	62	0	0	1m-75m 3
05707	00381	D	A	4/6/98	21:48:40	39.487	-76.540	4/6/98	21:48:40	4/6/98 8:53	39.4862	-76.5253	153	0	0	1m-75m 3
05707	00381	D	A	4/6/98	21:48:40	39.487	-76.540	4/6/98	21:47:10	4/6/98 14:58	39.4863	-4.1284	137	0	0	1m-75m 3
05707	00381	D	3	4/8/98	11:24:21	39.496	-76.578	4/8/98	11:27:21	4/6/98 21:03	39.4845	-76.5263	65	0	0	1m-75m 3
05707	00381	H	B	4/9/98	13:37:26	39.485	-76.487	4/9/98	13:35:56	4/7/98 3:15	39.2645	-76.6640	149	0	0	1m-75m 3
05707	00381	H	B	4/9/98	15:20:56	39.457	-76.505	4/9/98	15:19:26	4/7/98 9:21	39.4880	-4.1283	78	0	0	5m-100m 3
05707	00381	J	B	4/9/98	17:20:45	39.493	-76.545	4/9/98	17:19:15	4/7/98 21:34	39.4867	-76.5268	132	0	0	1m-75m 4
05707	00381	D	3	4/8/98	11:24:21	39.496	-76.578	4/8/98	11:25:51	4/8/98 3:39	39.4867	-76.5267	112	0	0	0m-26m 3N
05707	00381	J	B	4/9/98	17:20:45	39.493	-76.545	4/9/98	17:22:15	4/8/98 9:49	39.4873	-76.5270	101	0	0	6m-50m 3
05707	00381	^J	B	4/9/98	17:20:45	39.493	-76.545	4/9/98	17:22:15	4/8/98 22:03	39.4870	-76.5278	144	0	0	6m-50m 3
05707	00381	^H	B	4/9/98	15:20:56	39.457	-76.505	4/9/98	15:22:26	4/9/98 4:16	39.4870	-76.5272	630	1	0	5m-100m 4
05707	00381	J	B	4/10/98	20:30:00	39.470	-76.502	4/10/98	20:30:45	4/9/98 10:16	39.4875	-76.5277	182	0	0	6m-50m 2
05707	00381	J	B	4/10/98	20:30:00	39.470	-76.502	4/10/98	20:30:45	4/9/98 16:25	39.4870	-76.5268	107	0	0	0m-26m 4N
05707	00381	^H	B	4/12/98	02:21:07	39.526	-76.505	4/12/98	02:23:22	4/9/98 22:32	39.4872	-76.5273	90	0	0	6m-50m 3
05707	00381	D	A	4/10/98	22:02:15	39.479	-76.554	4/10/98	22:00:45	4/10/98 4:46	39.4867	-76.5272	578	0	0	6m-50m 3
05707	00381	D	A	4/10/98	22:02:15	39.479	-76.554	4/10/98	21:59:15	4/10/98 10:44	39.4858	-76.5258	91	0	0	1m-75m 3
05707	00381	H	B	4/12/98	02:21:07	39.526	-76.505	4/12/98	02:18:52	4/11/98 5:13	39.4870	-76.5263	426	0	0	6m-50m 3
05707	00381	^J	B	4/13/98	06:49:54	39.496	-76.541	4/13/98	06:49:09	4/11/98 11:13	39.4873	-76.5277	69	0	0	6m-50m 3
05707	00381	J	B	4/13/98	06:49:54	39.496	-76.541	4/13/98	06:50:39	4/11/98 23:27	39.4867	-76.5263	215	0	0	6m-50m 3
05707	00381	D	3	4/13/98	12:55:40	39.484	-76.523	4/13/98	12:55:40	4/12/98 5:42	39.4877	-76.5268	488	0	0	1m-75m 3
05707	00381	H	B	4/14/98	14:22:17	39.574	-75.367	4/14/98	14:21:32	4/12/98 11:45	39.4877	-76.5260	229	0	0	6m-50m 3
05707	00381	H	B	4/14/98	14:22:17	39.574	-75.367	4/14/98	14:23:02	4/12/98 17:56	39.4865	-4.1284	561	0	0	1m-75m 3
05707	00381	J	3	4/14/98	18:05:47	39.485	-76.530	4/14/98	18:05:02	4/12/98 23:59	39.4870	-76.5253	359	0	0	1m-75m 3
05707	00381	D	A	4/14/98	12:32:31	39.482	-76.512	4/14/98	12:34:01	4/13/98 6:05	39.4883	-76.5275	366	0	0	6m-50m 4
05707	00381	D	A	4/14/98	12:32:31	39.482	-76.512	4/14/98	12:31:01	4/13/98 12:10	39.4868	-76.5273	67	0	0	6m-50m 3
05707	00381	^D	3	4/15/98	21:51:54	39.481	-76.547	4/15/98	21:51:09	4/14/98 0:24	39.4877	-76.5260	77	0	0	6m-50m 3
05707	00381	H	B	4/14/98	14:22:17	39.574	-75.367	4/14/98	14:23:02	4/14/98 6:30	39.4878	-76.5260	86	0	0	1m-75m 3
05707	00381	H	B	4/14/98	14:22:17	39.574	-75.367	4/14/98	14:21:32	4/14/98 12:36	39.4873	-76.5263	70	0	0	6m-50m 4
05707	00381	H	0	4/16/98	01:30:07	39.515	-76.446	4/16/98	01:32:22	4/14/98 18:46	39.4873	-76.5262	94	0	0	1m-75m 3
05707	00381	D	3	4/15/98	21:51:54	39.481	-76.547	4/15/98	21:52:39	4/15/98 0:54	39.4875	-76.5272	115	0	0	6m-50m 4
05707	00381	D	3	4/15/98	21:51:54	39.481	-76.547	4/15/98	21:51:09	4/15/98 7:02	39.4873	-76.5265	264	0	0	1m-75m 3
05707	00381	J	3	4/17/98	07:47:31	39.493	-76.559	4/17/98	07:46:46	4/15/98 19:12	39.4860	-76.5272	111	0	0	6m-50m 3
05707	00381	J	B	4/17/98	09:27:55	39.485	-76.509	4/17/98	09:29:25	4/16/98 1:26	39.4867	-76.5262	358	0	0	1m-75m 3
05707	00381	^J	3	4/19/98	20:30:55	39.489	-76.516	4/19/98	20:27:55	4/16/98 7:32	39.4875	-76.5263	270	0	0	6m-50m 4
05707	00381	J	3	4/19/98	20:30:55	39.489	-76.516	4/19/98	20:29:25	4/16/98 13:37	39.4865	-76.5260	218	0	0	6m-50m 4
05707	00381	J	B	4/19/98	18:49:40	39.475	-76.565	4/19/98	18:50:25	4/16/98 19:41	39.4870	-76.5272	86	0	0	6m-50m 4

ID	PROG	SAT	LC	Arg Date	Arg Time	Arg Lat	Arg Lon	INT_DATE	INT_TIME	GPS_DATE	GPS Lat	GPS Lon	ALT	QUAL
05707	00381	H	3	4/28/98	14:44:21	39.479	-76.501	4/28/98	14:47:21	4/27/98 12:40	39.4875	-4.1283	111	51m-75m 3N
05707	00381	J	A	4/28/98	20:32:33	39.490	-76.510	4/28/98	20:34:48	4/27/98 18:56	39.4875	-76.5253	638	26m-50m 3N
05707	00381	J	A	4/28/98	20:32:33	39.490	-76.510	4/28/98	20:34:48	4/28/98 0:56	39.4878	-76.5267	285	26m-50m 3N
05707	00381	H	B	4/28/98	18:52:36	39.480	-76.624	4/28/98	18:51:51	4/28/98 7:01	39.4848	-76.5255	248	51m-75m 3N
05707	00381	^J	B	4/28/98	18:52:36	39.480	-76.624	4/28/98	18:53:21	4/28/98 13:06	39.4870	-76.5267	182	51m-75m 3N
05707	00381	J	A	4/28/98	20:32:33	39.490	-76.510	4/28/98	20:30:18	4/28/98 19:16	39.4855	-4.1285	172	51m-75m 3N

Take The Argo fix time and Position let it represent a probable Position location of 3k or less. (assuming 0 velocity on Xmitter) The Review the GPS time and Positions as they pertain to the Doppler fix time. Now Using a series of GPS Positions (determined by the # of Doppler Counts) we Can now produce an error boundary Layer for the Xmitters probable positions.

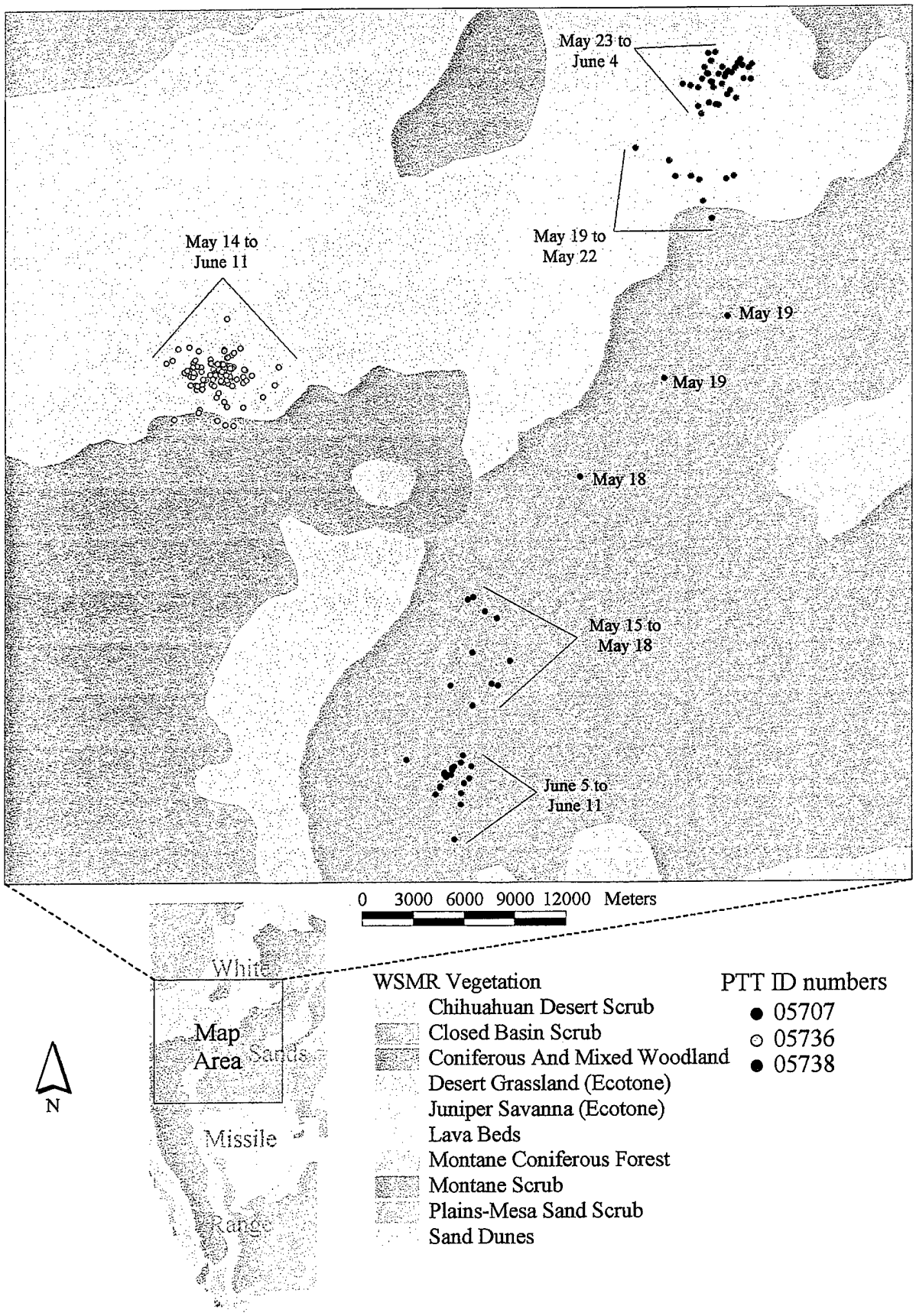
APPENDIX D

THIS IS A SAMPLE PRINTOUT OF SATELLITE ALERT FOR STEWARTSTOWN

SAT	DIR	OFFST	STRT_DT	STRT_TM	STRT_AZ	ME_TM	ME_AZ	ME_EL	END_TM	END_AZ	SITE
NOAA 11	N	E	12/22/97	23:54:40	141.54	00:02:10	68.05	37.51	00:09:40	354.96	Stewartstown
NOAA 11	N	W	12/23/97	01:35:30	194.25	01:42:50	264.53	27.87	01:50:10	334.21	Stewartstown
NOAA 14	S	E	12/23/97	06:59:20	26.60	07:06:30	94.74	26.50	07:13:40	163.81	Stewartstown
NOAA 14	S	W	12/23/97	08:39:50	5.24	08:47:20	291.32	39.19	08:54:50	217.17	Stewartstown
*NOAA 12	S	E	12/23/97	10:09:30	38.10	10:15:10	87.96	11.38	10:21:00	139.93	Stewartstown
NOAA 14	S	W	12/23/97	10:22:50	339.36	10:26:30	310.45	3.80	10:30:20	280.06	Stewartstown
*NOAA 12	S	W	12/23/97	11:48:20	11.51	11:55:50	291.11	80.74	12:03:20	198.03	Stewartstown
*NOAA 11	S	E	12/23/97	12:17:20	33.41	12:23:50	91.26	16.03	12:30:20	149.83	Stewartstown
*NOAA 12	S	W	12/23/97	13:29:30	349.40	13:35:00	301.93	10.40	13:40:30	254.34	*Stewartstown
*NOAA 11	S	W	12/23/97	13:57:10	9.90	14:04:50	291.76	62.96	14:12:30	205.26	*Stewartstown
*NOAA 11	S	W	12/23/97	15:39:20	347.48	15:44:20	306.15	8.21	15:49:30	262.95	*Stewartstown
*NOAA 14	S	E	12/23/97	16:49:00	86.99	16:53:20	52.33	5.35	16:57:50	16.45	*Stewartstown
*NOAA 14	N	E	12/23/97	18:25:10	147.17	18:32:50	67.64	46.44	18:40:20	353.21	*Stewartstown
*NOAA 14	N	W	12/23/97	20:06:40	200.82	20:13:40	265.74	22.42	20:20:40	331.05	*Stewartstown
*NOAA 12	N	E	12/23/97	21:30:30	123.48	21:37:00	63.72	19.14	21:43:30	3.52	*Stewartstown
NOAA 11	S	E	12/23/97	22:08:30	65.74	22:10:50	47.76	1.45	22:13:20	28.46	Stewartstown
*NOAA 12	N	W	12/23/97	23:09:10	177.35	23:16:40	262.93	54.92	23:24:10	342.38	Stewartstown
NOAA 11	N	E	12/23/97	23:42:40	134.48	23:49:50	65.54	29.50	23:57:00	357.65	Stewartstown
*NOAA 12	N	W	12/24/97	00:53:40	243.33	00:57:30	274.51	3.98	01:01:40	308.51	Stewartstown
NOAA 11	N	W	12/24/97	01:22:50	187.52	01:30:20	263.58	36.03	01:37:50	337.21	Stewartstown
NOAA 11	N	W	12/24/97	03:11:40	274.06	03:12:20	279.13	0.11	03:12:50	282.94	Stewartstown
NOAA 14	S	E	12/24/97	06:48:30	29.68	06:55:20	92.37	21.08	07:02:20	157.52	Stewartstown
NOAA 14	S	W	12/24/97	08:28:50	7.24	08:36:20	291.01	48.92	08:44:00	211.41	Stewartstown
*NOAA 12	S	E	12/24/97	09:48:30	48.30	09:53:00	85.88	5.55	09:57:30	123.26	Stewartstown
NOAA 14	S	W	12/24/97	10:11:20	343.60	10:15:40	308.81	5.79	10:20:20	271.03	Stewartstown
*NOAA 12	S	E	12/24/97	11:26:20	16.16	11:33:50	97.94	64.08	11:41:20	186.38	Stewartstown
*NOAA 11	S	E	12/24/97	12:05:10	37.41	12:11:10	88.69	11.86	12:17:10	141.18	Stewartstown
*NOAA 12	S	W	12/24/97	13:07:00	355.23	13:13:20	298.19	16.64	13:19:40	240.63	*Stewartstown
*NOAA 11	S	W	12/24/97	13:44:40	12.35	13:52:30	280.30	81.35	14:00:10	198.70	*Stewartstown
*NOAA 11	S	W	12/24/97	15:26:30	351.19	15:32:10	303.17	11.12	15:37:50	254.64	*Stewartstown
*NOAA 14	S	E	12/24/97	16:39:00	78.03	16:42:30	50.62	3.40	16:46:10	21.75	*Stewartstown
*NOAA 14	N	E	12/24/97	18:14:20	141.42	18:21:50	67.60	37.31	18:29:20	355.15	*Stewartstown
*NOAA 14	N	W	12/24/97	19:55:20	194.53	20:02:30	262.95	28.11	20:09:50	334.10	*Stewartstown
*NOAA 12	N	E	12/24/97	21:09:30	110.51	21:15:20	59.63	12.23	21:21:10	8.58	*Stewartstown
*NOAA 12	N	W	12/24/97	22:47:00	165.65	22:54:40	299.66	86.74	23:02:10	347.03	Stewartstown
NOAA 11	N	E	12/24/97	23:30:30	127.93	23:37:30	63.52	23.34	23:44:20	0.42	Stewartstown
NOAA 11	N	E	12/24/97	23:30:30	127.93	23:37:30	63.52	23.34	23:44:20	0.42	Stewartstown
*NOAA 12	N	W	12/25/97	00:29:50	224.75	00:35:10	270.62	9.41	00:40:50	319.72	Stewartstown
NOAA 11	N	W	12/25/97	01:10:10	180.71	01:17:50	262.67	46.86	01:25:20	339.78	Stewartstown
NOAA 11	N	W	12/25/97	02:56:10	249.93	02:59:20	274.67	2.64	03:02:50	302.25	Stewartstown
NOAA 14	S	E	12/25/97	06:37:40	32.83	06:44:20	92.60	16.62	06:50:50	150.63	Stewartstown
NOAA 14	S	W	12/25/97	08:17:40	9.50	08:25:20	291.40	61.49	08:33:00	205.79	Stewartstown
*NOAA 12	S	E	12/25/97	09:28:40	66.79	09:30:30	81.21	0.82	09:32:30	96.97	Stewartstown
NOAA 14	S	W	12/25/97	09:59:50	347.74	10:05:00	305.45	8.02	10:10:10	262.97	Stewartstown
*NOAA 12	S	E	12/25/97	11:04:30	21.21	11:11:50	97.86	39.55	11:19:10	174.61	Stewartstown
*NOAA 11	S	E	12/25/97	11:53:20	43.35	11:58:40	88.15	8.30	12:04:00	132.66	Stewartstown
*NOAA 12	S	W	12/25/97	12:44:50	359.64	12:51:40	293.36	25.43	12:58:30	228.10	*Stewartstown
*NOAA 11	S	E	12/25/97	13:32:20	14.92	13:40:00	100.07	78.49	13:47:40	192.13	*Stewartstown
*NOAA 11	S	W	12/25/97	15:13:40	354.78	15:19:50	301.84	14.50	15:26:10	246.26	*Stewartstown
*NOAA 14	S	E	12/25/97	16:29:20	66.90	16:31:50	47.63	1.63	16:34:20	28.33	*Stewartstown
*NOAA 14	N	E	12/25/97	18:03:40	135.31	18:10:50	67.18	30.20	18:18:10	357.39	*Stewartstown
*NOAA 14	N	W	12/25/97	19:44:00	188.23	19:51:30	263.17	35.25	19:59:00	337.02	*Stewartstown
*NOAA 12	N	E	12/25/97	20:49:00	95.25	20:53:40	56.19	7.06	20:58:30	15.46	*Stewartstown
*NOAA 12	N	E	12/25/97	22:25:10	154.16	22:32:40	72.54	58.91	22:40:10	351.54	Stewartstown
NOAA 11	N	E	12/25/97	23:18:40	120.28	23:25:10	61.75	18.43	23:31:50	2.57	Stewartstown
*NOAA 12	N	W	12/26/97	00:06:40	209.77	00:13:00	267.89	16.41	00:19:30	327.63	Stewartstown
NOAA 11	N	W	12/26/97	00:57:30	173.95	01:05:20	261.90	61.33	01:13:00	342.64	Stewartstown
NOAA 11	N	W	12/26/97	02:42:20	237.59	02:46:50	274.10	5.45	02:51:30	311.73	Stewartstown
NOAA 14	S	E	12/26/97	06:27:00	36.86	06:33:10	90.63	12.84	06:39:20	143.80	Stewartstown
NOAA 14	S	W	12/26/97	08:06:40	11.65	08:14:20	295.26	77.01	08:22:10	199.97	Stewartstown
NOAA 14	S	W	12/26/97	09:48:30	350.82	09:54:10	303.51	10.53	09:59:50	255.76	Stewartstown
*NOAA 12	S	E	12/26/97	10:42:40	26.46	10:49:40	93.57	24.91	10:56:40	162.19	Stewartstown

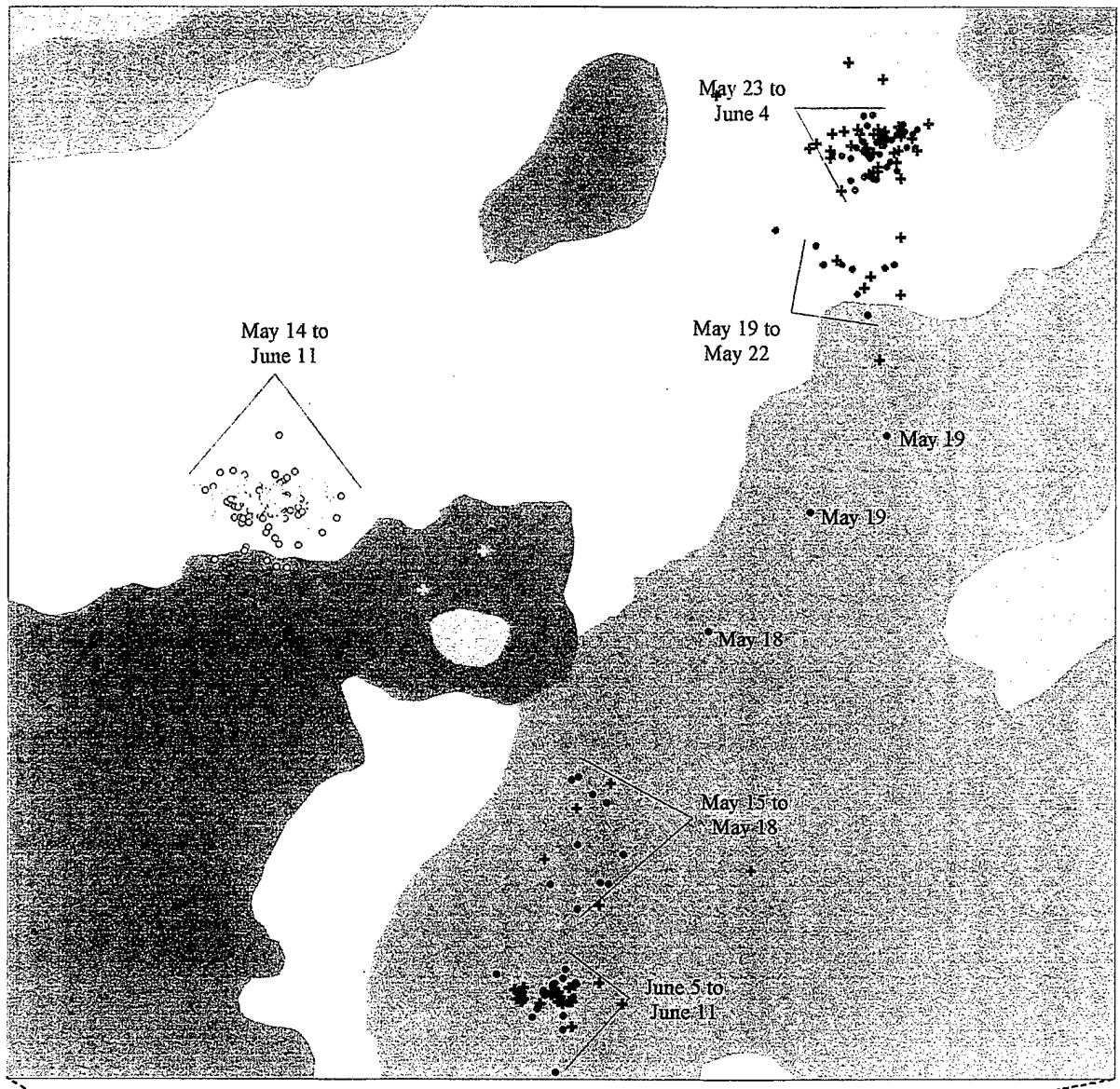
Oryx GPS Locations

White Sands Missile Range, New Mexico
May 14 - June 11, 1998



Oryx Location Estimates
GPS (circles) and Doppler (crosses)

White Sands Missile Range -- May 14 - June 11, 1998

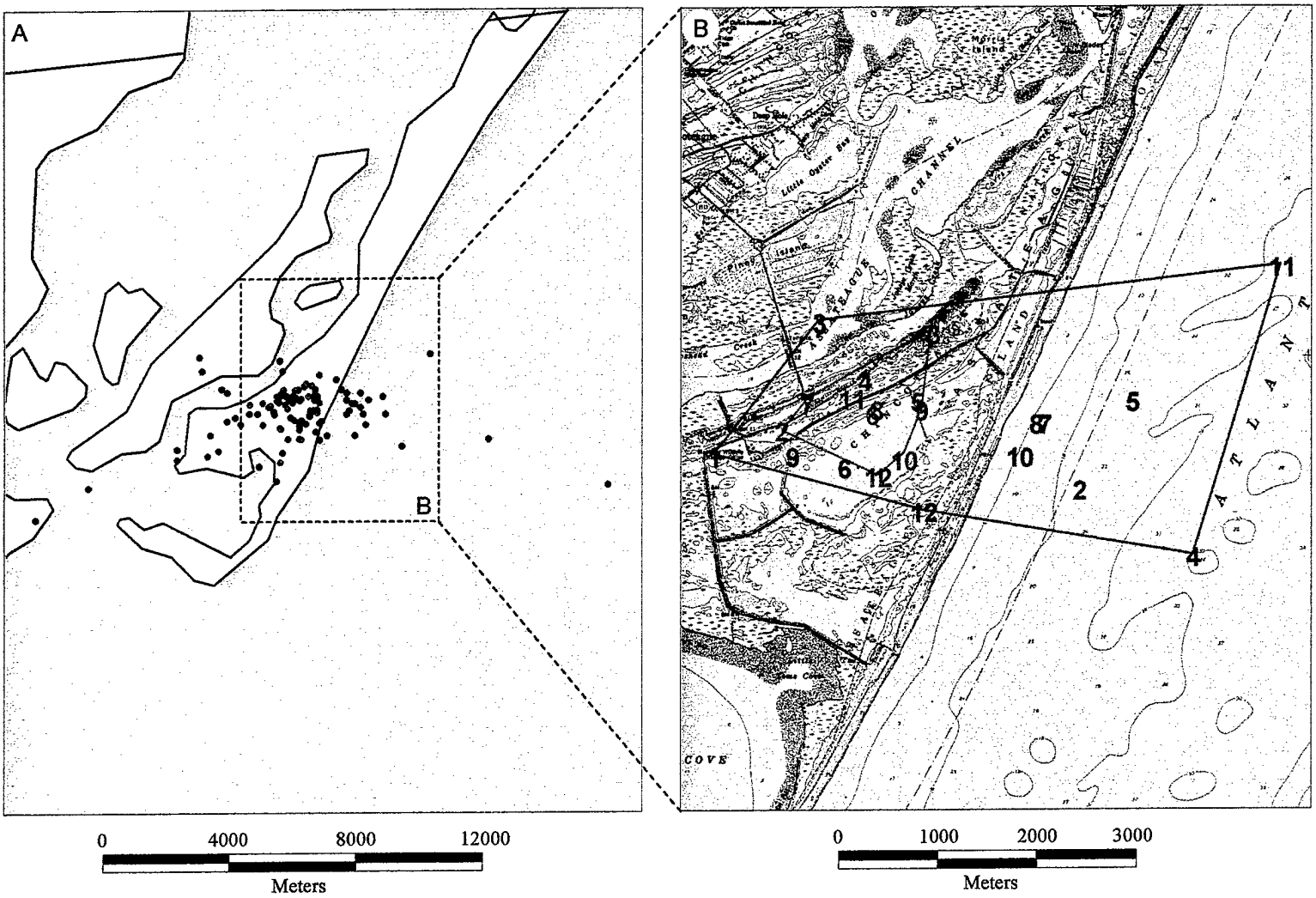


SECTION III

GPS PTT Testing Data, GIS Mapping

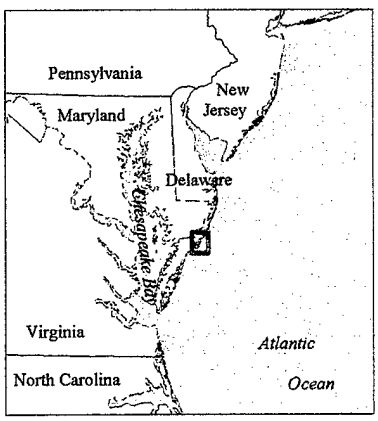
GPS and Doppler Location Estimates

A Comparison Demonstration of GPS and Doppler Location Estimates
of a wild pony on Assateague Island, VA



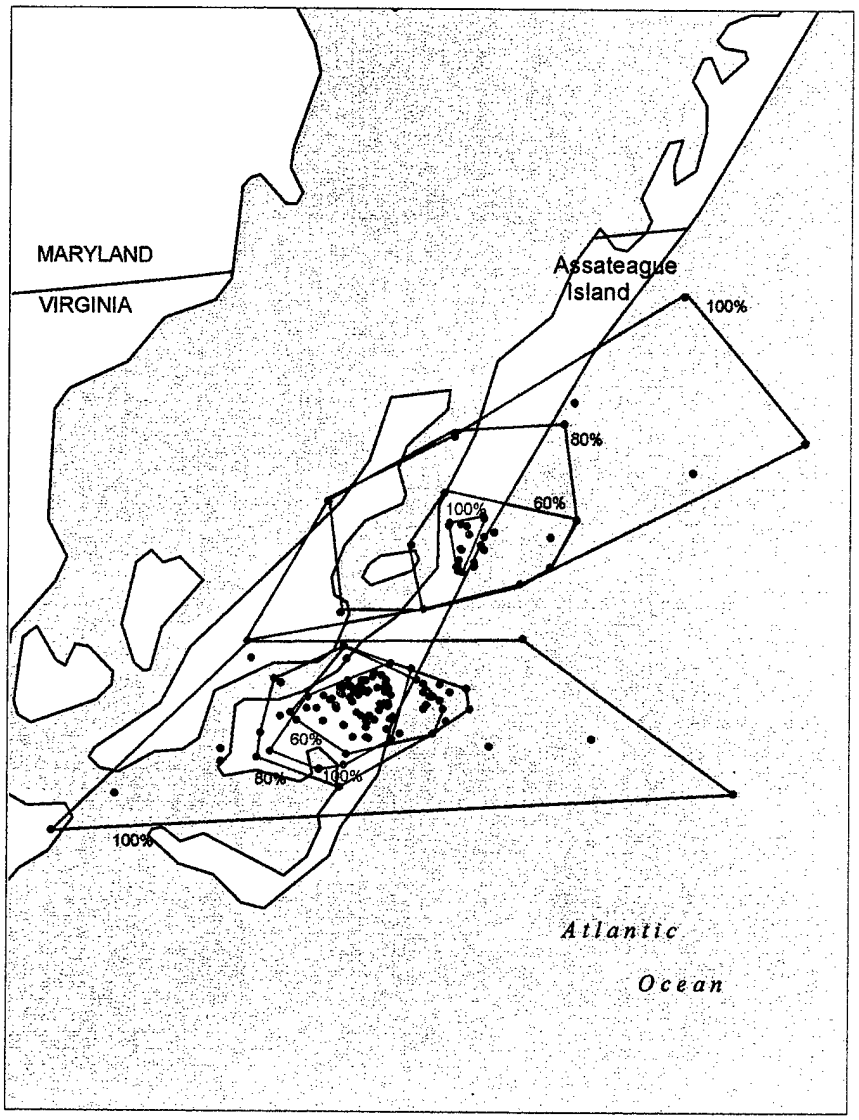
(A) Our experimental GPS PTT collar was placed on a wild pony on Assateague Island, VA for 12 days during the fall of 1997. Figure A presents a general overview comparison of all GPS and Argos doppler location estimates for the pony's time spent on the southern half of the island (the largest dataset from one area). The Argos locations are all of location class 1, 2, or 3. Twelve GPS locations and twelve Argos locations were chosen for point-by-point comparison in Figure B.

(B) This figure represents a magnification of the area enclosed with the dotted line in Figure A. The numbers, referring to correlating GPS (red) and Argos (blue) location estimates, are in chronological order. For example, a red "2," acquired by the GPS receiver, correlates with a blue "2," acquired by the Argos system (correlation = +/- 1hour). The polygons represent the areal extent of these twelve GPS and twelve Argos location estimates.



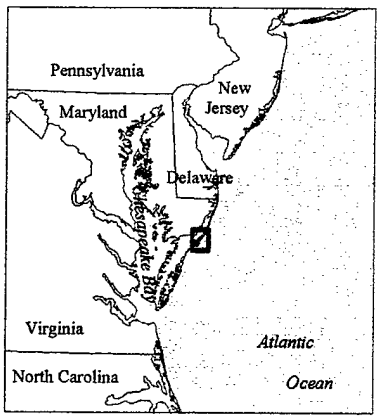
GPS and Doppler Ranges

A Comparison Demonstration of Wild Pony ranges based on GPS and Argos locations
Assateague Island, VA



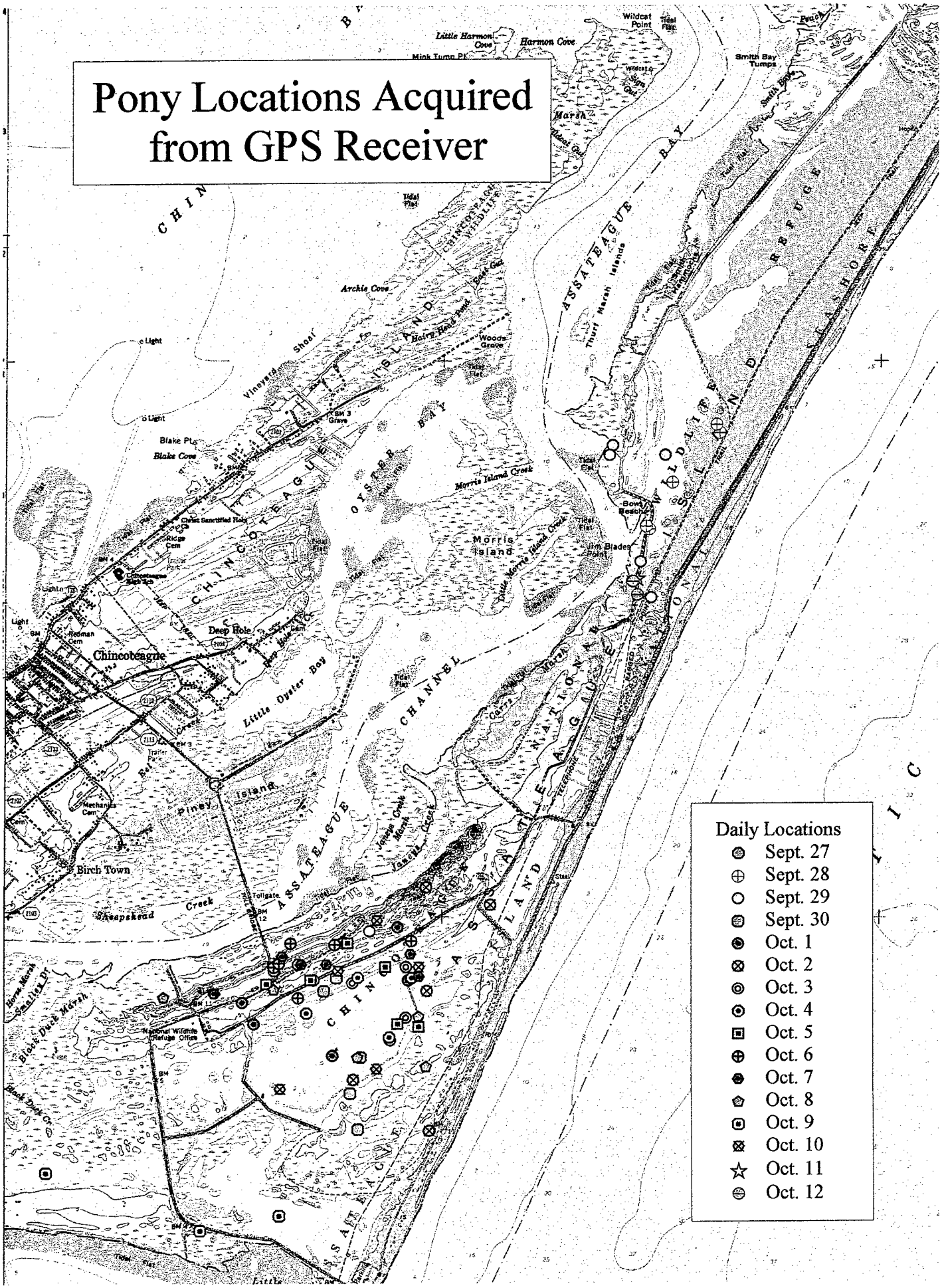
0 7000 14000 21000

Meters

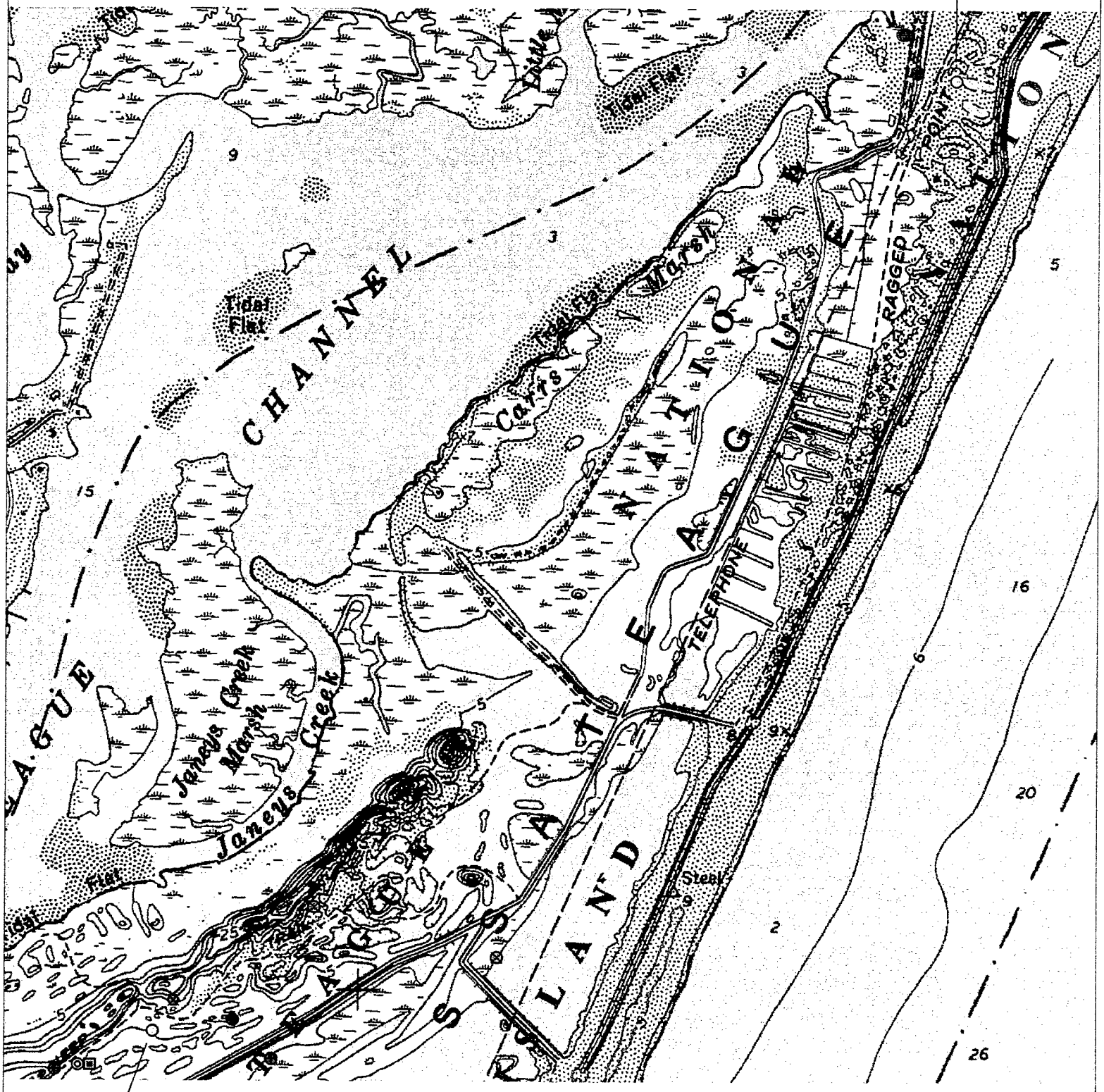


This figure describes a general overview of pony ranges derived from GPS and Argos location estimates. The polygons show the areal extent of each dataset and are divided into northern and southern sections, since the pony spent a significant amount of time in two separate regions of the island. The GPS polygons (red) include 100% of GPS locations, while each successively smaller Argos polygon (blue) contains 100%, 80% and 60% of data points, respectively (Argos location classes 1, 2, and 3 only). A preliminary visual evalution suggests that the accuracy of 60% of Argos location estimates begins to converge with the accuracy of the GPS dataset. Further research and statistical analysis might prove this true, in which case the Argos locations are still less accurate, but may not be less useful, given a larger dataset to establish a core area of accurate points. Because the GPS receiver and Argos transmitter are mounted on the same platform, such a comparison can be performed and statistically evaluated. Post-processing algorithms to improve the accuracy of Argos location estimates may be possible using this kind of comparitive data.

Pony Locations Acquired from GPS Receiver



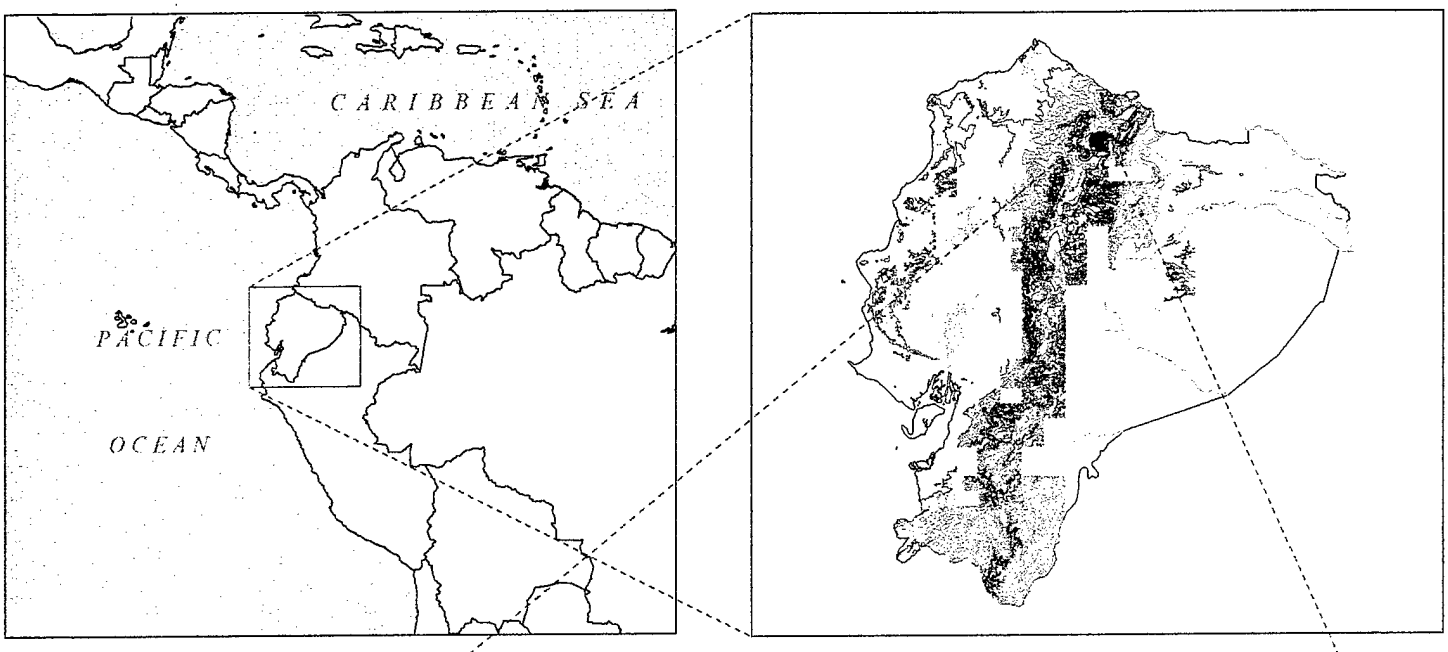
Last Location Inside Pony Area
and
First Location Outside

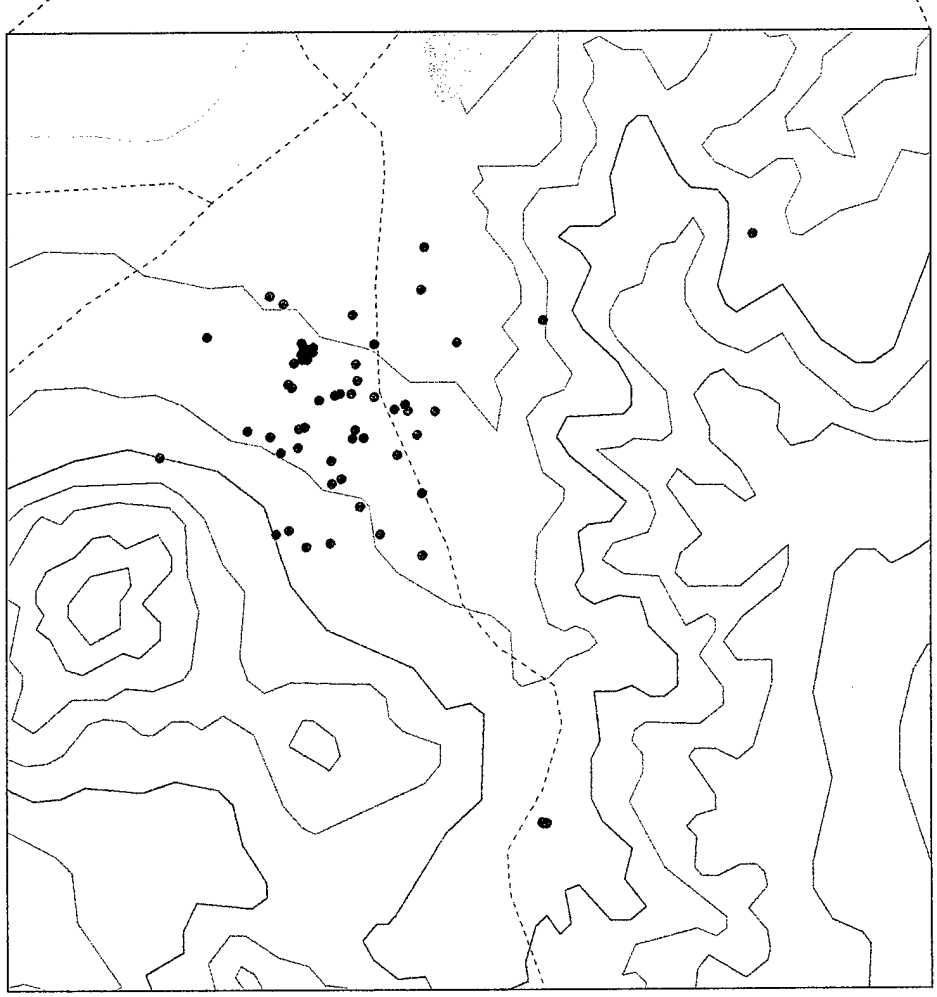


Sept. 29
10:20 pm

2 1/4 miles in 4 hours
GPS accuracy = within 70 meters

Location Estimates for GPS PTT Collar # 5725
Ecuador; May 31 - June 24, 1998





N

- GPS Location Estimates of PTT # 5725

Water

Roads

Elevation Contours (ft)

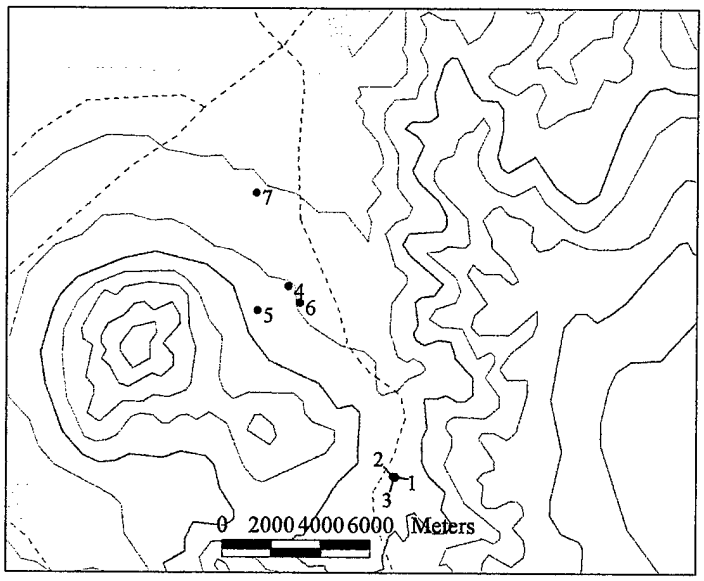
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
11000
12000
13000
14000
15000
16000
17000
18000
19000

0 4 8 12

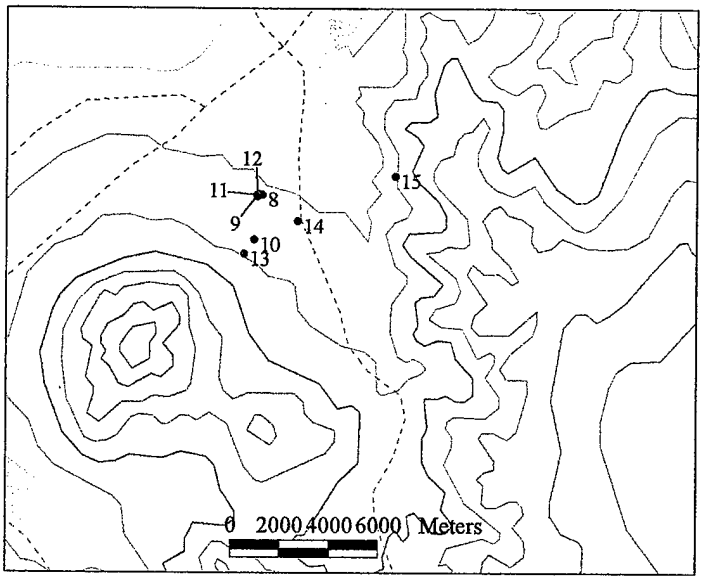
Miles

Two-day Subsets of GPS Collar Locations

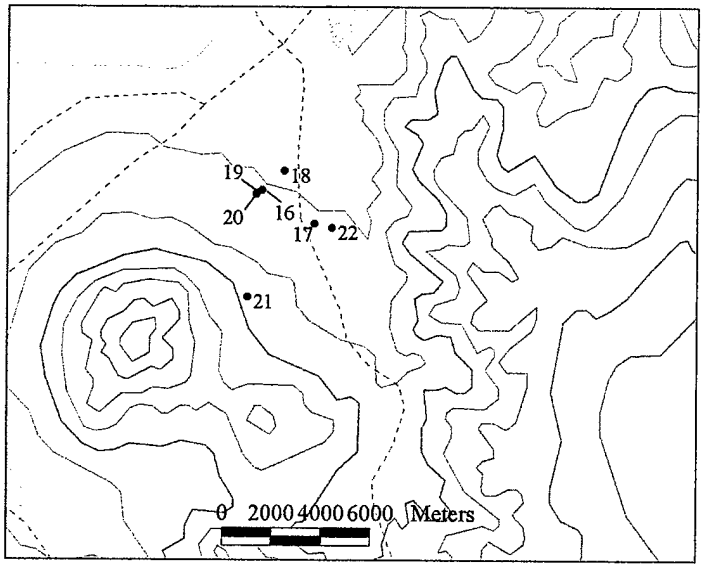
Page 1: May 31 - June 7



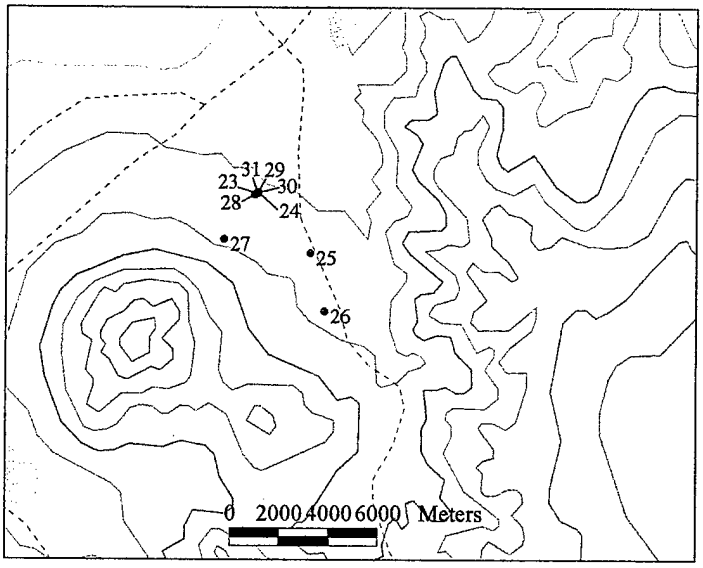
May 31 - June 1



June 2 - June 3



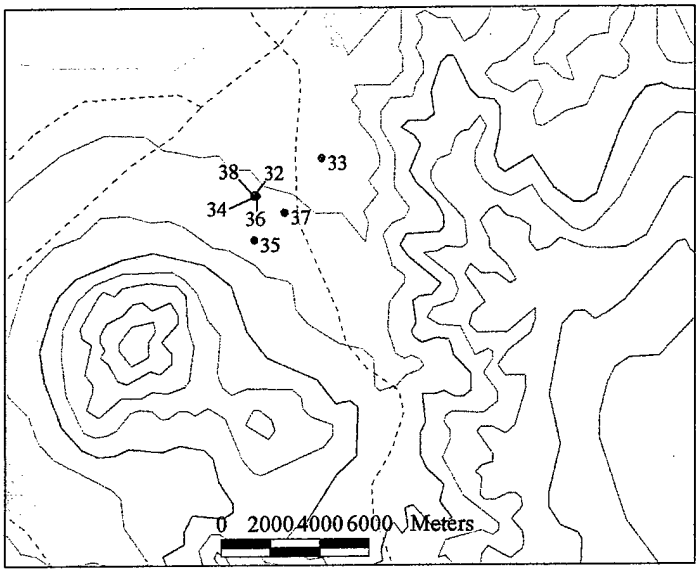
June 4 - June 5



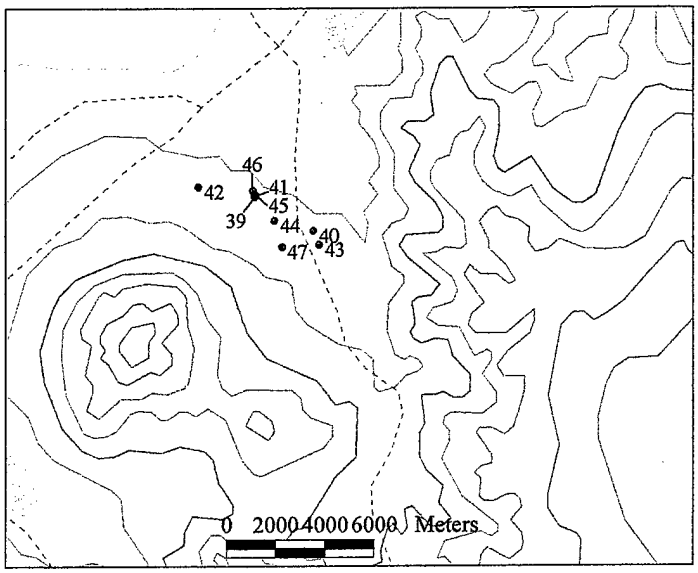
June 6 - June 7

Two-day Subsets of GPS Collar Locations

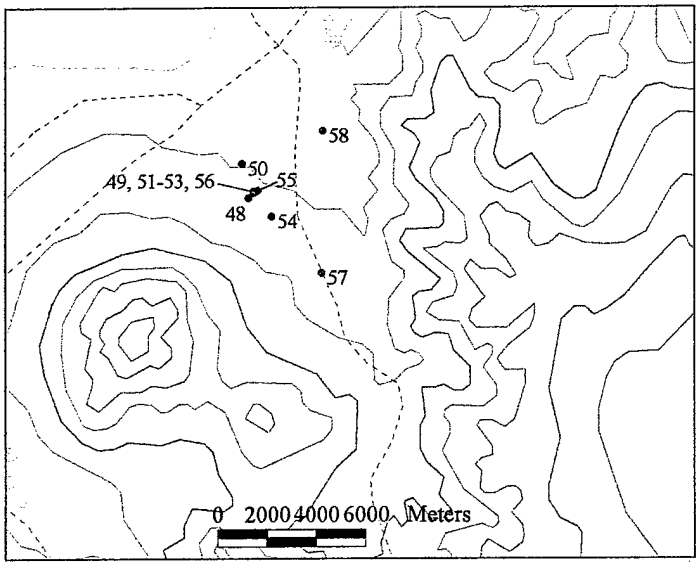
Page 2: June 8 - June 16



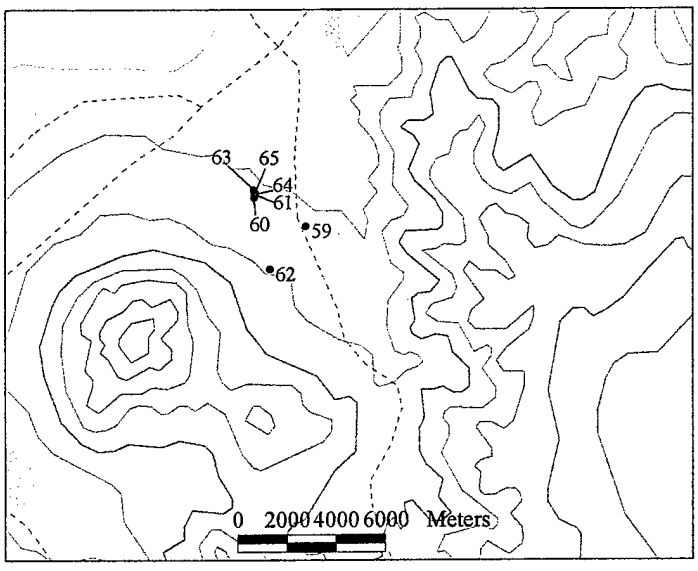
June 8 - June 9



June 11 - June 12



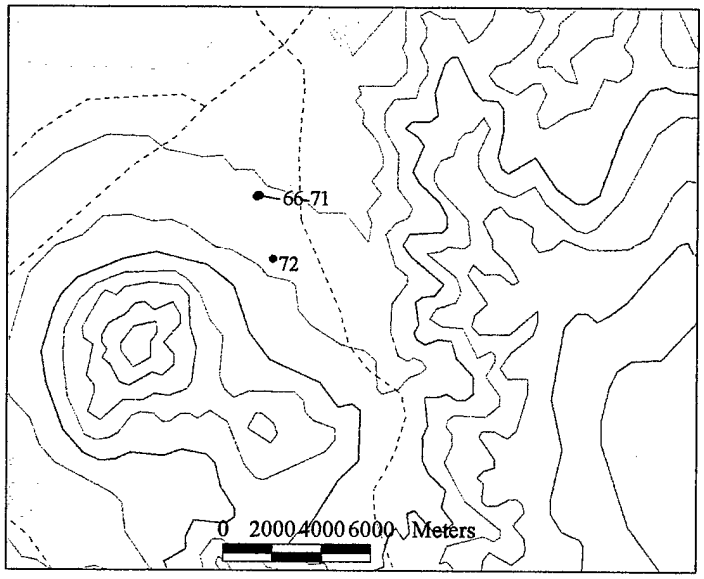
June 13 - June 14



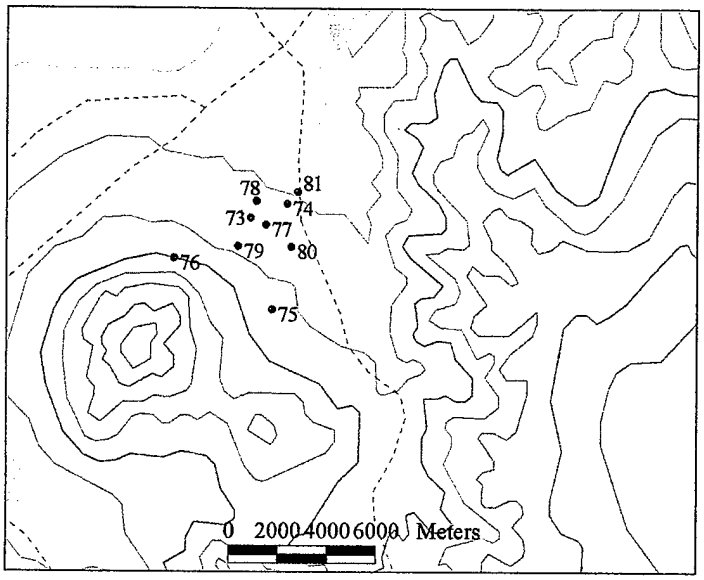
June 15 - June 16

Two-day Subsets of GPS Collar Locations

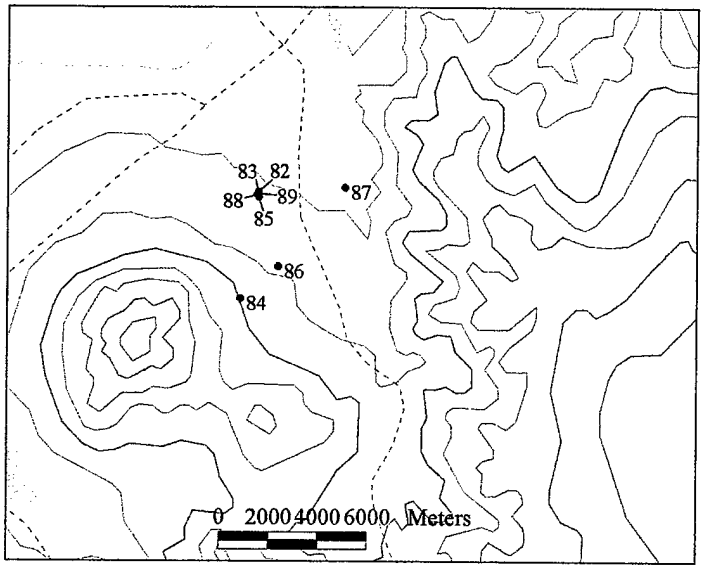
Page 3: June 17 - June 24



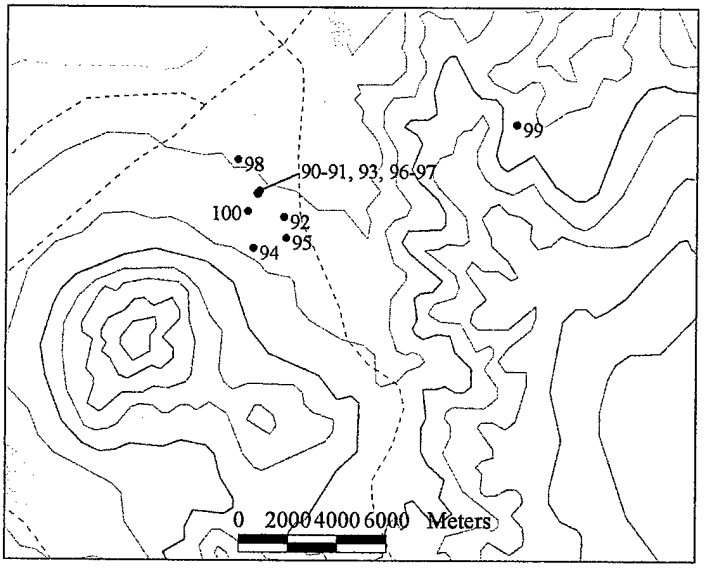
June 17 - June 18



June 19 - June 20

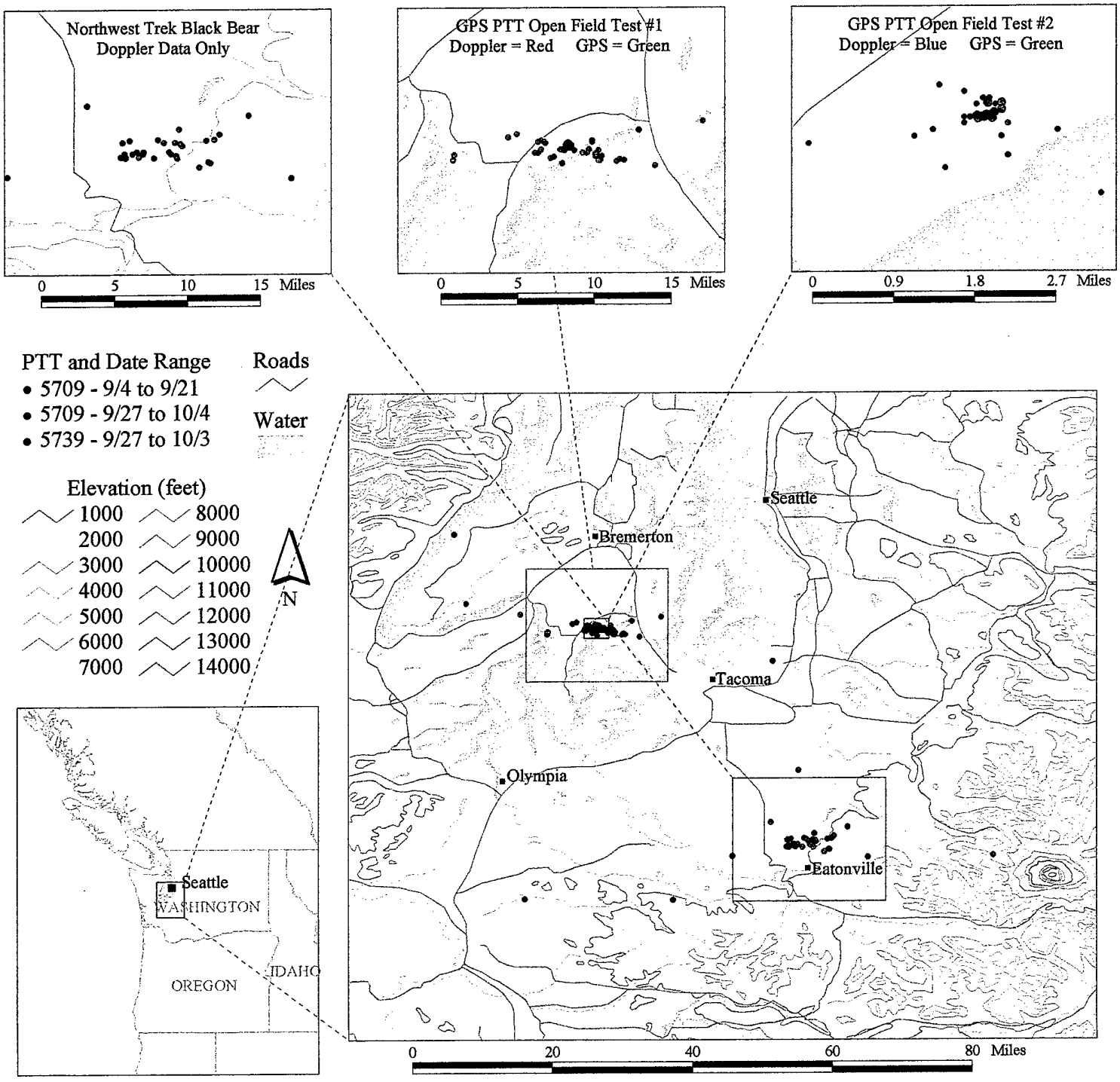


June 21 - June 22



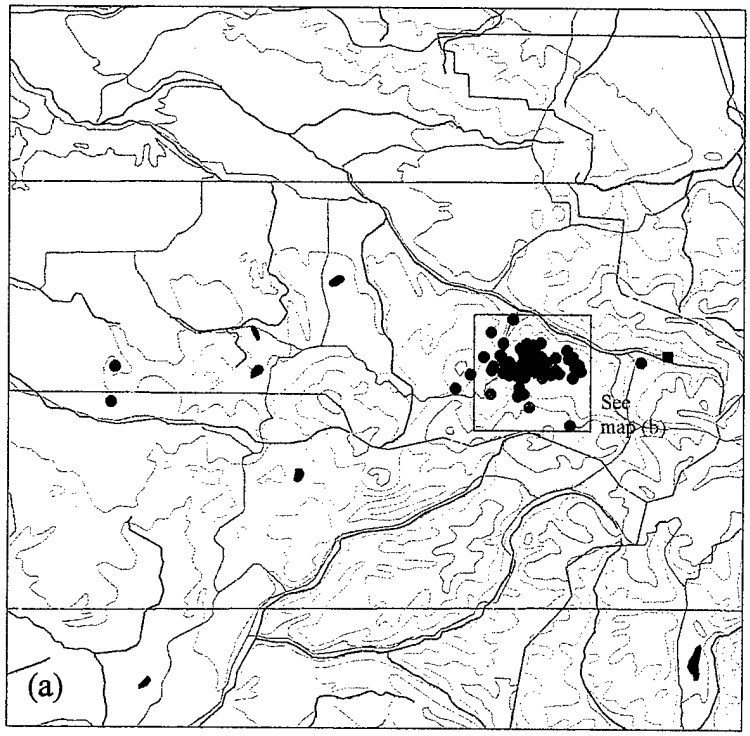
June 23 - June 24

GPS PTT Collar Tests, Washington

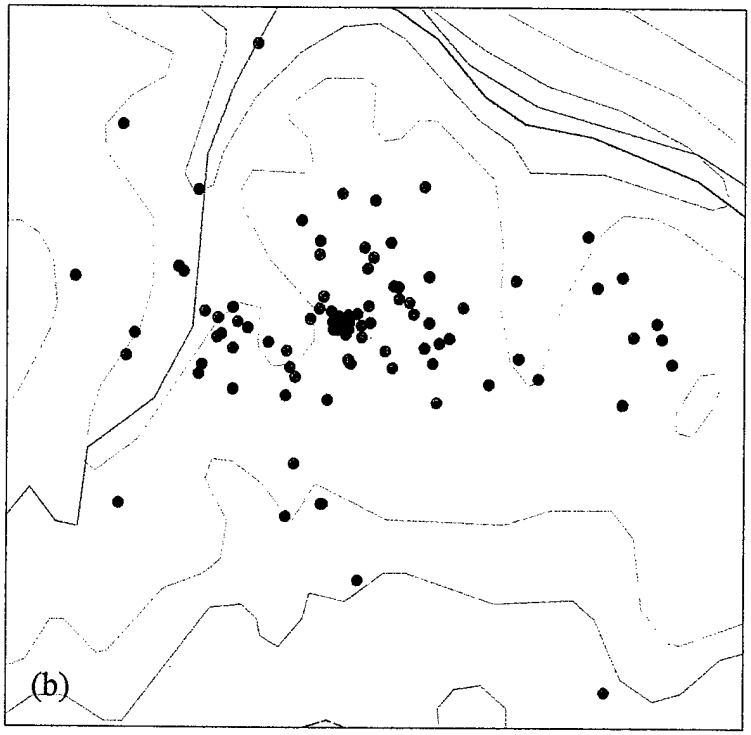


Location Estimates of Captive Mountain Lion Instrumented with GPS PTT

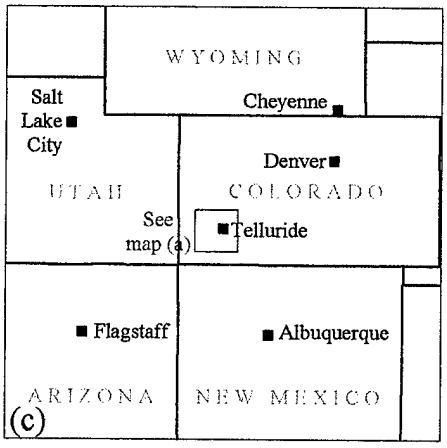
April 6, 1998 to May 19, 1998



0 8 16 24 32 Miles



0 1 2 3 4 Miles



- GPS Location Estimates
- Doppler Location Estimates

Water

Roads

Elevation (ft)

6000
7000
8000
9000
10000
11000
12000
13000
14000

N

SECTION IV

White Sands Missile Range, NM, GPS PTT testing and pilot demonstration on wild Oryx.

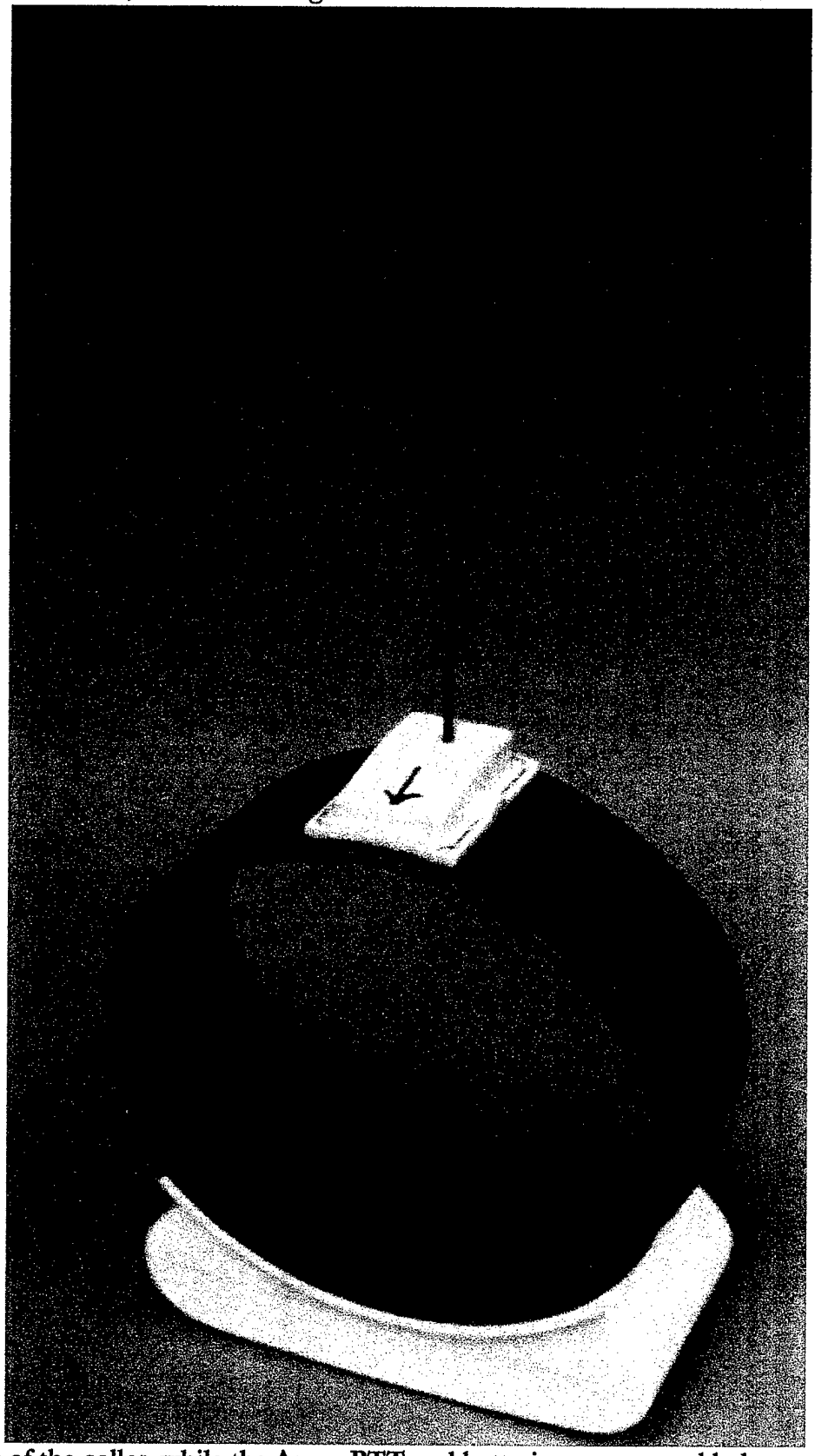
CCRT Develops Advanced Satellite Biotelemetry Technologies to Improve Natural Resource Management on Military Lands

In partnership with the U.S. Army and the Defense Department's Strategic Environmental Research and Development Program (SERDP), the Center for Conservation Research & Technology (CCRT) at the University of Maryland Baltimore County has developed advanced, satellite-based tracking and monitoring technologies that provide a stand-off capability to gather natural history information on target animal species. These technologies are particularly effective with species that may be difficult to study using traditional methods, such as migratory or widely ranging species, threatened and endangered species, or candidate species. These technologies include: (a) a new Global Positioning System (GPS) Platform Transmitter Terminal (PTT), which transmits GPS locations (accurate to within 100 meters) from the target animal to researchers via the Argos satellite system; (b) meteorological sensors for inclusion in a satellite transmitter package to glean information about the environment surrounding the target animal; and (c) an acoustic sensor with pattern recognition software that will be small enough to be integrated into the PTT to perform a variety of functions. The enhancement in location accuracy provided by the addition of GPS receivers in Argos satellite transmitters represents a quantum leap forward in the application of radio telemetry to wildlife science.

These advanced data gathering technologies, i.e., wildlife tracking and monitoring via satellites, provide state-of-the-art methods to acquire otherwise difficult to collect, expensive, or unattainable data with little or no interference to ongoing military testing and training, and other land-use activities. Prototypes of the GPS PTTs have been successfully field-tested, yielding greatly improved accuracy over Argos Doppler location fixes. The CCRT research team demonstrated the new GPS PTTs on wild oryx at White Sands Missile Range, NM (see results in following pages). Prior to that, a good field demonstration comparison between the GPS and Doppler (Argos) location estimates was conducted for sheep on a rural Maryland farm, mountain lions in Telluride, CO, and wild ponies on Assateague Island, VA (see following pages). A final field demonstration is planned on wild burros at Yuma Proving Ground, AZ. These technologies have been transitioned to the Legacy Resource Management Program for further field demonstration.

The use of satellite-based tracking and monitoring technologies to acquire the natural history information necessary for effective management and conservation of widely-ranging animal species could save DoD roughly 10-30% over currently available best methods (i.e., conventional, ground-based radio telemetry) for acquiring the same types of information. These cost savings accrue to the military in a variety of ways: reduced direct costs for personnel, equipment, and field time; enhanced speed and accuracy of the data; and avoiding conflicts with ongoing base training and testing operations. **Where wildlife management issues have a direct impact on military readiness, these capabilities can provide data to devise solutions quickly, at low cost, and with minimum interruption to military land use activities.** For additional information, please contact Dr. William S. Seegar at (410) 436-2586 (e-mail: wsseegar@aol.com) or Mr. Blake Henke at (410) 961-6692 (e-mail: blakehenke@msn.com).

GPS PTT Collar, suitable for larger animals. The GPS receiver is encased on



top of the collar, while the Argos PTT and batteries are encased below.

Field Demonstration and Testing

GPS PTT Collar Test/Demonstration at White Sands Missile Range, NM, Summer 1998

From May to October of 1998, CCRT tested three prototype GPS PTT collars on free-ranging, African oryx (*oryx gazella*) throughout the 2.2 million acre White Sands Missile Range in New Mexico (WSMR). WSMR is the military's largest all overland test range and the Army's largest installation. Oryx were introduced to WSMR in 1969 as a big game animal. The Oryx are owned by New Mexico Game and Fish and are managed by WSMR. Oryx tracking and monitoring data obtained via satellite can be used to make informed decisions regarding management issues such as habitat and home range requirements, seasonal habitat use, interactions with other species, range carrying capacity, allowable hunting take, and the impacts of military testing.

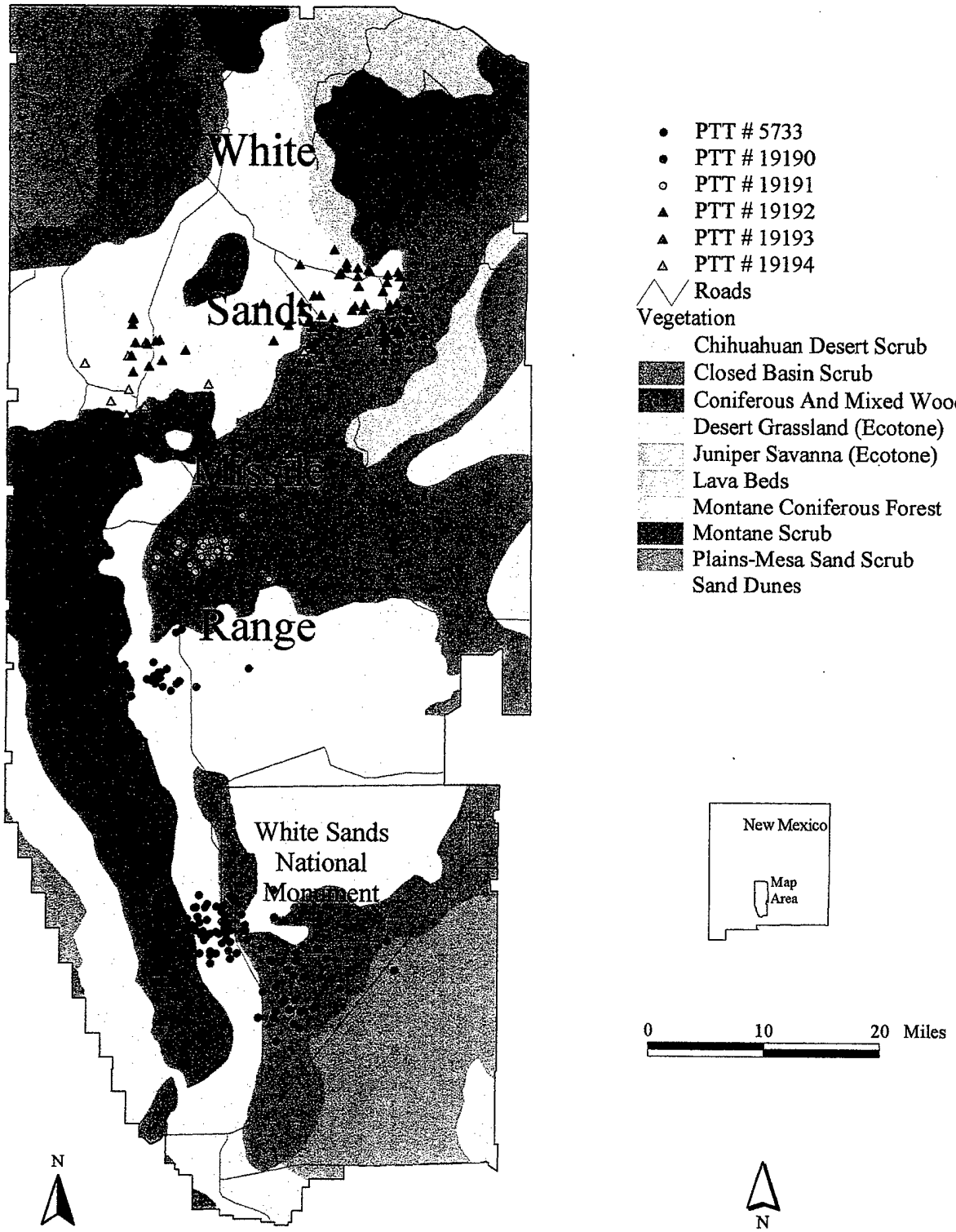
The GPS PTT collars incorporate a Global Positioning System (GPS) receiver with an Argos Platform Transmitter Terminal (PTT). The GPS receiver computes locations, accurate to 100 meters or less, using signals transmitted by the GPS constellation of 24 satellites. The GPS locations are then saved in a microprocessor and transmitted to polar orbiting NOAA/Argos satellites, which downlink the data to ground stations for access by users.

CCRT previously demonstrated the use of Argos satellite PTT collars (that lacked the GPS receivers), accurate to 1000 meters or more, for wildlife tracking at WSMR during 1996 and 1997. Using Doppler shift algorithms, the Argos system calculates the animal's locations, which are then available through the Argos data network. The 1996/97 technology demonstration at WSMR (supported by the DoD's Legacy Resource Management Program) highlighted the utility of tracking animals via space-based systems to enable the remote monitoring of target species *without* disturbance to installation training, testing, or other land use activities. Similarly, wildlife tracking and monitoring via satellite is not hindered by military mission schedules or area restrictions due to unexploded ordnance or sensitive operations.

The 1998 WSMR demonstration (supported by the DoD's Strategic Environmental Research and Development Program (SERDP)) highlights the remarkable improvement in data accuracy and volume afforded by the addition of GPS receivers in PTT collars. Results from this 1998 real world test show that the GPS PTT collars outperform any previous design for use on a large, open country, free-ranging ungulate. The new SERDP supported collar design is a significant improvement upon previous Doppler-only wildlife collars. GPS locations are accurate to within 100 meters, while Doppler locations are usually accurate to within 1000+ meters. The new GPS PTT collar design also includes enhancements in power management and microprocessor integration. These advances will dramatically improve the volume and quality of animal movement data gathered via satellite. As the charts below show, during the WSMR testing we received an average of 1.92 GPS locations per day (out of a possible 4), and an average of 58.9% location class 1, 2, or 3 Doppler locations. This compares with 0 GPS locations and only 18.6% Doppler location class 1, 2, or 3, from the 1996/97 Legacy demonstration. Shorter than predicted battery life on two of the units was due to longer than predicted GPS acquisition times. Improvements in GPS

Oryx Movements and Vegetation Cover

White Sands Missile Range - April 3, 1996 to January 31, 1997



Oryx is an introduced big game species that must be managed by the White Sands Missile Range (WSMR) and kept off adjoining lands, including the White Sands National Monument. This task has proven difficult due to the nature of the WSMR testing mission, the remoteness of the area, and the often inaccessible habitat used by the species. Oryx seem to maintain discrete territories, as indicated by these data.

antenna design and new multi-channel GPS receivers have been incorporated and are being field-tested.

GPS PTT COLLAR SPECIFICATIONS:

Weight:	750 grams (2 C cell) or less, depending on requirements 850 grams (2 D cell) or less, depending on requirements
GPS duty cycle:	6 hr. acquisition interval (4 GPS hits/day)
PTT duty cycle:	8 hrs on 22 hours off
PTT transmission interval:	60 seconds
PTT transmission power:	1 D cell unit: 1watt 1 D cell unit: .5 watt 1 C cell unit: .5 watt
Expected Battery life:	D cell 1 watt = 90 days D cell .5 watt = 180 days C cell .5 watt = 90 days

GPS Performance Data

PTT	Battery Size	Start Date	End Date	Predicted Battery Life	Actual Battery Life	Possible GPS Loc	Actual GPS Loc	% Possible GPS Loc
5707	D	5/15/98	9/26/98	180	135	540	262	46.60%
5736	D	5/15/98	9/4/98	90	113	452	256	56.20%
5738	C	5/15/98	8/20/98	90	83	308	132	42.20%

GPS Location Quality Data

PTT	Total # of GPS Hits	GPS Location Quality (accuracy decreases from left to right) 19	17	15	13	29	27	25
5707	262	2	8	3	1	31	78	9
5736	256	12	4	0	0	31	85	11
5738	132	19	2	0	0	23	36	1

GPS Location Quality (decreases from left to right) 23	39	37	35	33	49	47	45	43
2	8	74	20	3	0	5	5	0
2	12	63	13	4	3	10	5	0
0	4	30	3	0	3	10	1	0

***NOTE: GPS location quality indicators listed in the table above (i.e., 19 – 43) are relative measures of the accuracy of the GPS location estimate. A "19," for example, is estimated to be accurate to within 0 – 26 meters. A "27" is estimated to be accurate to within 26 – 50 meters. A "39" is estimated to be accurate to within 51 – 75 meters. Even the lowest quality GPS fixes (e.g., 45 and 43) are estimated and tested to be accurate to within 250 - 300 meters.**

Doppler PTT Location Performance Data

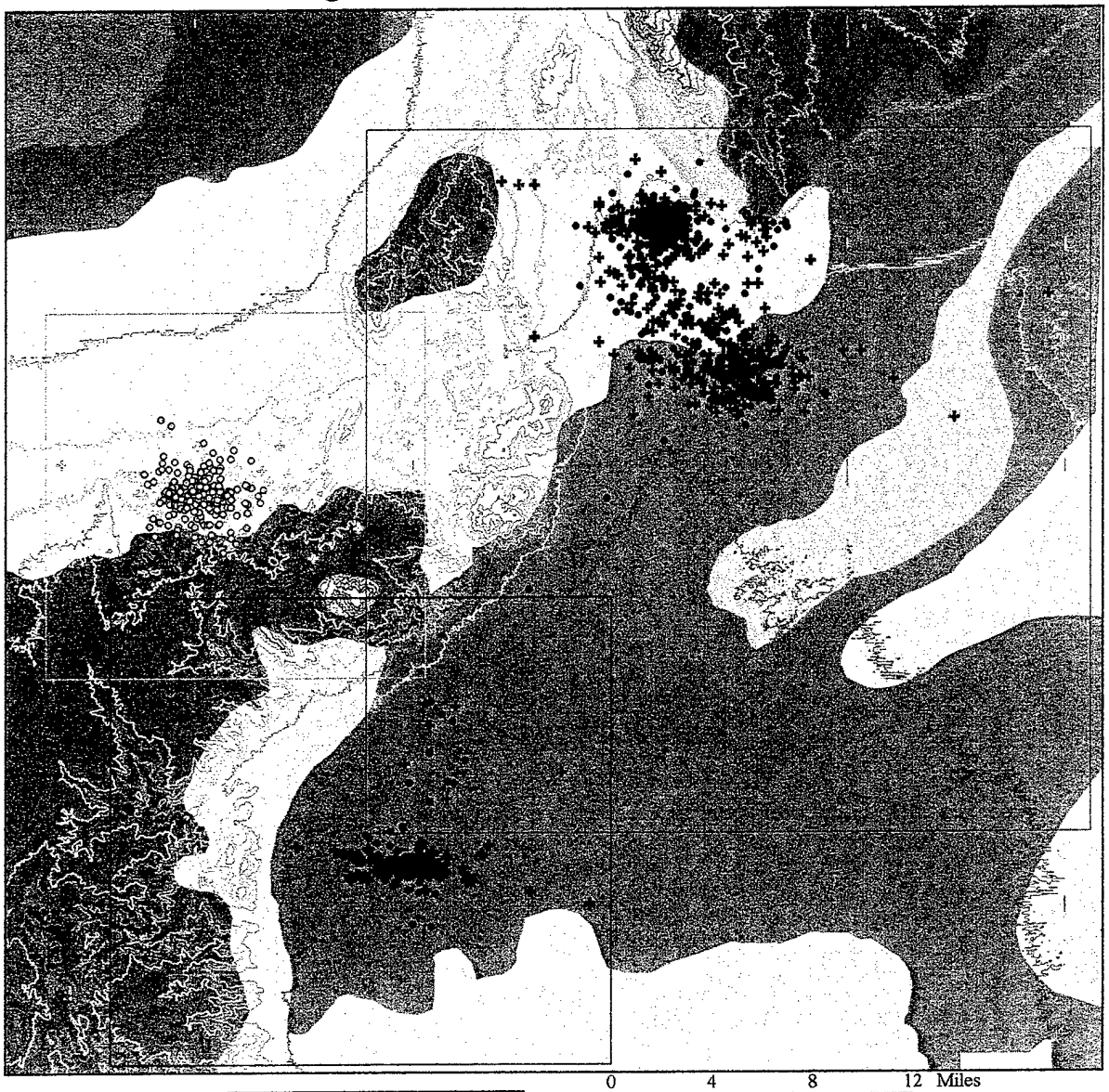
PTT	Total # Doppler Locations	Location Class						
		3	2	1	0	A	B	Z
5707	750	147 19.6%	155 20.6%	116 15.5%	45 6%	139 18.5%	147 19.6%	1
5736	492	110 22.3%	112 22.7%	96 19.5%	30 6%	73 14.8%	70 14.2%	1
5738	273	72 26.4%	51 18.7%	31 11.4%	14 5%	54 19.8%	51 18.7%	0

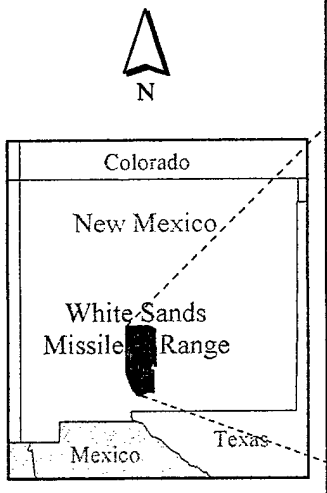
Argos Location Class (LC)

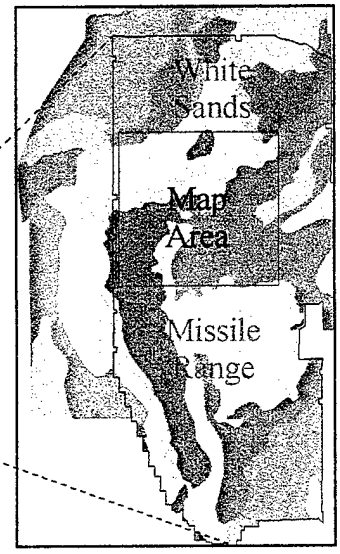
Class	Estimated Accuracy in Latitude and Longitude
3	<= 150 meters
2	<= 350 meters
1	<= 1000 meters
0	> 1000 meters
A and B	no estimate of location accuracy
Z	invalid location

Oryx Location Estimates
GPS and Doppler

White Sands Missile Range, New Mexico - 15 May 1998 to 27 September 1998







Three Oryx within the White Sands Missile Range (New Mexico) were instrumented with GPS/PTT collars. These collars were equipped with both standard Argos doppler transmitters and GPS receivers.

Oryx Location Estimates	Elevation Contours (m)	
• 5707 (GPS)	1176-1275	1876-1975
○ 5736 (GPS)	1276-1375	1976-2075
• 5738 (GPS)	1376-1475	2076-2175
+ 5707 (Doppler)	1476-1575	2176-2275
+ 5736 (Doppler)	1576-1675	2276-2375
+ 5738 (Doppler)	1676-1775	2376-2475
	1776-1875	2476-2575
		2576-2675

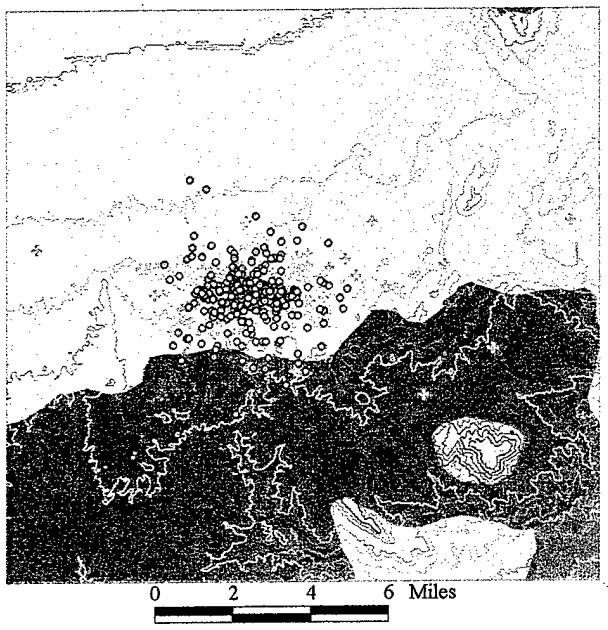
Vegetation

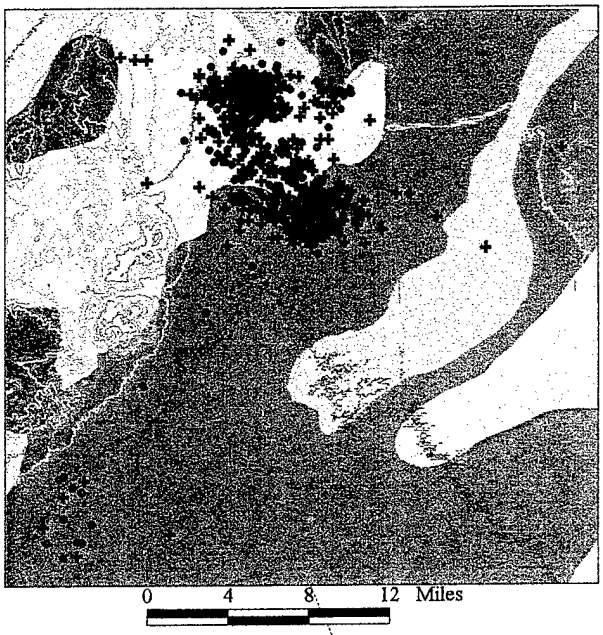
Chihuahuan Desert Scrub	Lava Beds
Closed Basin Scrub	Montane Coniferous Forest
Coniferous/Mixed Woodland	Montane Scrub
Desert Grassland (Ecotone)	Plains-Mesa Sand Scrub
Juniper Savanna (Ecotone)	Sand Dunes

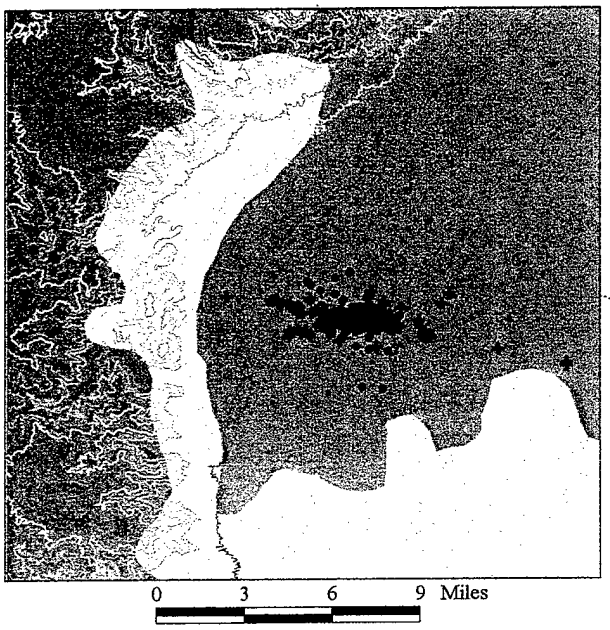
Oryx GPS PTT data plotted on a ten-year old Landsat image of WSMR, NM.

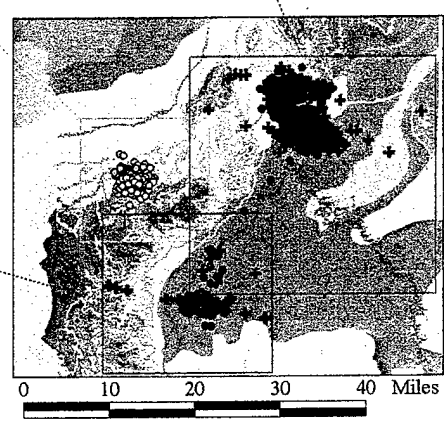
Oryx Location Estimates
GPS and Doppler - Individual Collars

White Sands Missile Range, New Mexico - 15 May 1998 to 27 September 1998









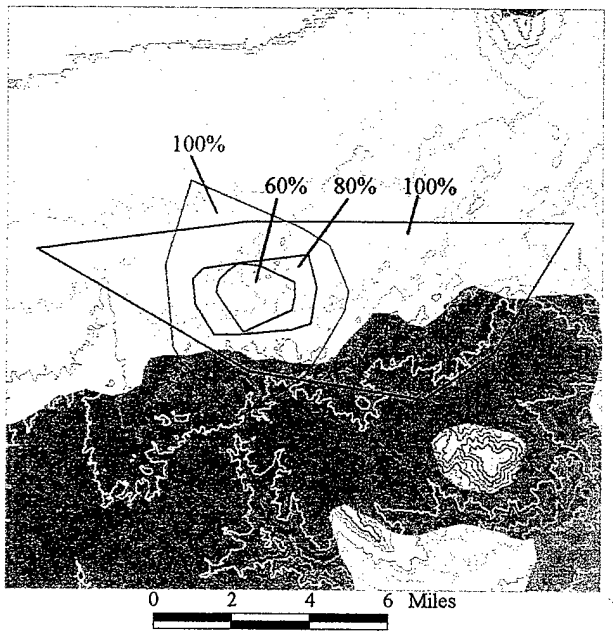
Oryx Location Estimates
- 5707 (GPS)
- 5736 (GPS)
- 5738 (GPS)
- 5707 (Doppler)
- 5736 (Doppler)
- 5738 (Doppler)

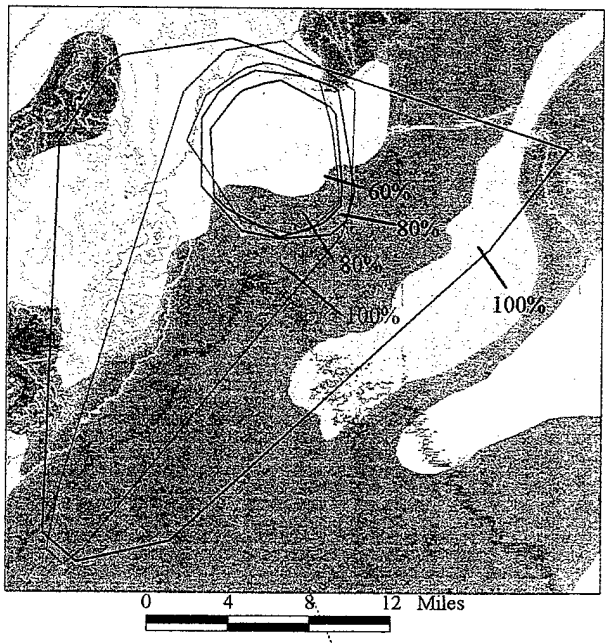
Elevation Contours (m)
- 1176-1275
- 1276-1375
- 1376-1475
- 1476-1575
- 1576-1675
- 1676-1775
- 1776-1875
- 1876-1975
- 1976-2075
- 2076-2175
- 2176-2275
- 2276-2375
- 2376-2475
- 2476-2575
- 2576-2675

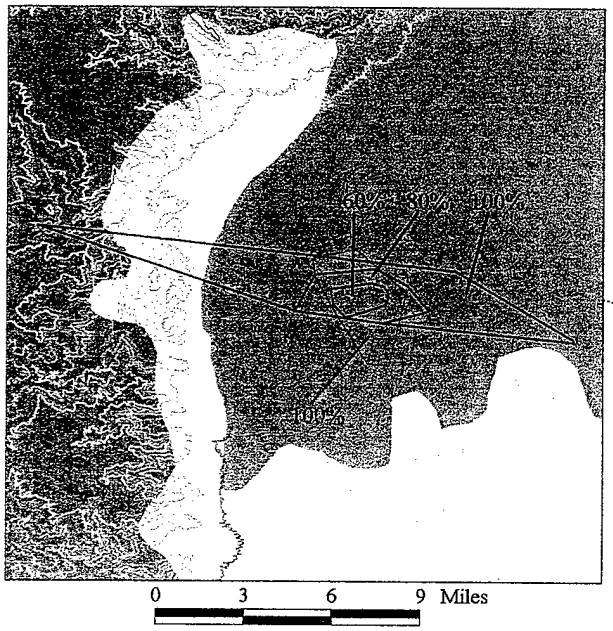
Vegetation
- Chihuahuan Desert Scrub
- Closed Basin Scrub
- Coniferous/Mixed Woodland
- Desert Grassland (Ecotone)
- Juniper Savanna (Ecotone)
- Lava Beds
- Montane Coniferous Forest
- Montane Scrub
- Plains-Mesa Sand Scrub
- Sand Dunes

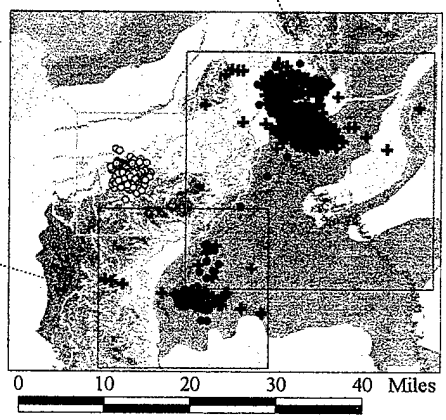
These figures show the GPS and Doppler location estimates of all three Oryx tracked at White Sands Missile Range, New Mexico. All three datasets are visible on the smaller map (lower right), while the three larger maps contain closer views of the individual datasets.

Oryx Home Ranges
GPS and Doppler - Individual Collars
White Sands Missile Range, New Mexico - 15 May 1998 to 27 September 1998









Oryx Location Estimates	Elevation Contours (m)	
• 5707 (GPS)	1176-1275	1876-1975
○ 5736 (GPS)	1276-1375	1976-2075
• 5738 (GPS)	1376-1475	2076-2175
+ 5707 (Doppler)	1476-1575	2176-2275
+ 5736 (Doppler)	1576-1675	2276-2375
+ 5738 (Doppler)	1676-1775	2376-2475
	1776-1875	2476-2575
		2576-2675

Vegetation	
Chihuahuan Desert Scrub	Lava Beds
Closed Basin Scrub	Montane Coniferous Forest
Coniferous/Mixed Woodland	Montane Scrub
Desert Grassland (Ecotone)	Plains-Mesa Sand Scrub
Juniper Savanna (Ecotone)	Sand Dunes

These figures show Oryx home range polygons during the data gathering period. The black polygons were calculated using Doppler location estimates; the red polygons were calculated using GPS location estimates. The size and shape of the Doppler range polygons were calculated using different percentages of the innermost data points (60%, 80%, 100%), to allow for erroneous outlier removal. Only one range polygon for GPS (100% of location estimates) is typically used since GPS datasets are assumed to have no severe outliers. However, for PTT 5707, both the 100% and 80% polygon for GPS locations are shown, since the 100% polygon contains locations recorded while the animal was moving to a new location.

SERDP supported papers and reports

Publications/Products and Media Coverage resulting from the Center for Conservation Research & Technology's (CCRT) SERDP and Legacy projects (FY94-97). These were supported wholly or in part by SERDP and/or Legacy.

NOTE: The items listed below are grouped together since the Legacy and SERDP projects were planned and executed in parallel. Additional publications not listed here are being produced at this time.

Conference Presentations (oral presentations and posters) and Technical Reviews:

Fuller, M. R. and K. Bates. "Some Effects of Radio Marking on Birds." Forum on Wildlife Telemetry, 21-23 September 1997, Snowmass, CO.

"An ArcView Graphic User Interface for the Display and Analysis of Satellite Telemetry Data." C. Klaus and L. Schueck, Raptor Research Center, Boise State University, Boise, ID, 83725. W. S. Seegar, U.S. Dept. of Defense, Edgewood Research Development and Engineering Center, Aberdeen Proving Ground, MD, 21010. M. Fuller, Snake River Field Station, U. S. Geological Survey, Boise, ID, 83706. Presented at: Dedicated Poster Session: Integrating GIS, Remote Sensing, and Radio-telemetry Technologies in Wildlife Research and Management. The Wildlife Society 4th Annual Conference, 21-27 September 1998, Snowmass, CO.

"Optimal Travel Routes of a Soaring Buteo and a Flapping Falco." Mark Fuller, Snake River Field Station, U.S. Geological Survey and Raptor Research Center, Boise State University, Boise, ID, 83706, USA. William S. Seegar, Department of Army, Edgewood, MD, 21010, USA. Linda Schueck Raptor Research Center, Boise State University, Boise, ID, 83725, USA. Presented at: Optimal Migration, 5-9 November 1997, Lund, Sweden.

"Movements of American White Pelicans from Nevada through the Western United States." Mark Fuller, Mike Yates, Linda Schueck, and Kirk Bates, U.S. Geological Survey and Raptor Research Center, Boise State University, Boise, ID. William S. Seegar, Department of Army, Edgewood, MD. William Henry, Stillwater NWR, Stillwater, NV. Harlan Shannon and George Young, Dept. of Meteorology, Penn State University, University Park, PA. presented at: The Wetland Connectivity and Waterbird Conservation in the Western Great Basin, 18-19 February, 1998, Bend, OR, USA.

"Movements of Ferruginous Hawks Through Western North America." Linda Schueck, Tom Maechtle, Mark Fuller, and Kirk Bates, U.S. Geological Survey and Raptor Research Center, Boise State University, Boise, ID. William S.

Seegar, Department of Army, Edgewood, MD. Joanna Ward, Utah State Univ. Dept. of Fisheries and Wildlife, Logan, UT. Presented at: The 40th Annual Meeting of the Idaho Academy of Science, 2-4 April 1998, Boise, ID, USA.

"Advanced Biotelemetry for Resource Management." SERDP Symposium poster presentations, William S. Seegar, 1995, 1996, 1997.

"Advanced Satellite Biotelemetry Capability Poised to Improve Resource Management on Military and Non-Military Lands to Contribute Toward Sustainable Development." W.S. Seegar, M.R. Fuller, M.B. Henke, De Lange/Woodlands Conference on Sustainable Development: Managing the Transition, Houston, TX, March 1997.

"Advanced Biotelemetry Technology Will Enhance Resource Management and Military Readiness on Military Lands." W.S. Seegar, M.R. Fuller, M.B. Henke, American Defense Preparedness Association Environmental Symposium, New Orleans, LA, April 1997.

"New and Advanced Satellite Tracking System Will Contribute to Natural Resources Conservation and Management." W.S. Seegar, M.R. Fuller, M.B. Henke, National Association of Environmental Professionals Conference, Orlando, FL, May 1997.

"Military Conservation Technologies of Potential Interest to the Tropical Test Center in Panama." W.S. Seegar, M.R. Fuller, M.B. Henke, Military Technologies Workshop, Panama City, Panama, July 1997.

"Advanced Satellite Tracking System will Contribute to Natural Resources Conservation and Management." W.S. Seegar, M.R. Fuller, M.B. Henke, Forum on Wildlife Telemetry, 21-23 September 1997, Snowmass, CO.

"Development and Application of Satellite-based Tracking System for Neotropical Migratory Birds and Its Results in Conservation Science." W.S. Seegar, M.R. Fuller, M.B. Henke, DoD Partners In Flight Working Group Meeting, March 1998

"Development and Demonstration of Advanced Satellite Tracking and Monitoring System to Enhance Military Readiness," W.S. Seegar, M.R. Fuller, M.B. Henke, National Defense Industrial Association Environmental Symposium, Tampa, FL, April 1998.

SERDP In-Progress-Reviews (1995, 1996, 1997, 1998), William S. Seegar.

Technical Journal Articles (peer reviewed) and Book Chapters:

1) Henny, C.J., W.S. Seegar and T.L. Maechtle. 1996. "DDE Decreases in Plasma of Spring Migrant Peregrine Falcons, 1978-94." Journal of Wildlife Management 0:342-349

2) Maechtle, T.L. 1998. "The Aba: a Device for Restraining Raptors and Other Large Birds." Journal of Field Ornithology 69:66-70.

3) Taft, S.J., R.N. Rosenfield, W.S. Seegar and T.L. Maechtle. 1998. "Paucity of hematozoa in Peregrine Falcons (Falco peregrinus) in West Greenland and Coastal Texas." Journal of the Helminthological Society of Washington 65:111-113.

4) "The Influence of Habitat, Prey, Abundance, Sex, and Breeding Success on the Ranging Behavior of Prairie Falcons." J.M. Marzluff, B.A. Kimsey, L.A. Schueck, M.E. McFadzen, M.S. Vekesy, J.C. Bednarz, The Condor, 99:567-584, 1997.

5) "Spatial Use and Habitat Selection of Golden Eagles in Southwestern Idaho." J.M. Marxluff, S.T. Knick, L.S. Schueck, T.J. Zarriello, The Auk 114(4): 673-687, 1997.

6) Fuller, M.R., W.S. Seegar, and P. Howey. 1995. "The Use of Satellite Systems for the Study of Bird Migration." Israel J. Zool. 41:243-252.

7) Fuller, M.R., W.S. Seegar, J.M. Marzluff, and B.A. Hoover. 1995. "Raptors, Technological Tools, and Conservation." Transcripts of 60th North American Wildlife and Natural Resources Conference, pp. 131-141.

8) Seegar, W.S., P.N. Cutchis, M.R. Fuller, J.J. Suter, V. Bhatnager, and J.S. Wall. 1996. "Fifteen Years of Satellite Tracking Development and Application to Wildlife Research and Conservation." John Hopkins APL Technical Digest. 17:305-315.

9) Buehler, D.A., J.D. Fraser, M.R. Fuller, L.S. McAllister, and J.K.A. Seegar. 1995. "Captive and Field-tested Radio Transmitter Attachments for Bald Eagles." J. Field Ornith; 66:173-180.

10) Samuel, M.D. and M.R. Fuller. 1994. "Wildlife Radio Telemetry." Pages 370-418 in T.A. Bookout, ed. "Research and Management Techniques for Wildlife and Habitats." Fifth ed. The Wildlife Society, Bethesda, Md.

12) Rosenfeld, R.N., J.W. Schneider, J.M. Papp, and W.S. Seegar, "Prey of Peregrine Falcons Breeding in West Greenland." The Condor 97:763-770, 1995.

Technical Reports:

Maechtle, T.L. 1997. Migration Studies of Migratory Peregrine Falcons at Padre Island, Texas. Unpublished report submitted to USFWS, Reg. 2 & 5 and Texas Parks and Wildlife Department.

Interim Legacy Project Report, submitted to the Legacy Program Office, 3/97.

Interim SERDP Project Report, submitted in draft form to SERDP 4/97.

Resource Managers' Technical Review (in press), 64 page documentary of the SERDP and Legacy projects and the formation of CCRT.

SERDP Final Report, due to SERDP 8/98

Media/Press publicity:

National Public Radio interview, spring 1997

Good Morning America Appearance, fall 1996

USA TODAY article, October 21, 1997

LA Times article, October 14, 1997

Idaho Statesman article, October 1997.

Reno Gazette article, August 1997.

Johns Hopkins University Magazine, cover article, Feb. 1997

ALL Bird TV cable television program (scheduled to air fall 1998)

National Wildlife Magazine interview, scheduled to appear in print late summer 1998.

BioScience Magazine interview, scheduled to appear in print late summer/early fall 1998.

Baltimore Sun interview, scheduled to run in late June, 1998.

Supporting Bibliography

SUPPORTING BIBLIOGRAPHY

Braun, C.E., J.H. Enderson, M.R. Fuller, Y.B. Linhart, and C.D. Marti. 1996. Northern goshawk and forest management in the southwestern United States. Wildl. Soc. Tech. Rev. 96-2. 19pp.

Brodeur, S., R. DeCarrie, D.M. Bird, and M. Fuller. 1996. Complete migration cycle of golden eagles breeding in northern Quebec. Condor 98:293-299.

Dingle, H. 1996. Migration: The Biology of Life on the Move. Oxford University Press, New York.

Fuller, M.R., W.S. Seegar, and P. Howey. 1995. The use of satellite systems for the study of bird migration. Israel J. Zool. 41:243-252.

Fuller, M.R., W.S. Seegar, J.M. Marzluff, and B.A. Hoover. 1995. Raptors, technological tools, and conservation. Trans. 60th North Am. Wildl. And Nat. Res. Conf. pp. 131-141.

Hensler, G.L., S.S. Klugman, and M.R. Fuller. 1986. Portable micro-computers for field collection of animal behavior data. Wildl. Soc. Bull. 14:189 - 192.

Howey, P., D.R. Witlock, M.R. Fuller, W.S. Seegar, and F.P. Ward. 1984. A computerized biotelemetry and data logging system. Pp. 442 - 446 in Proc. of the 8th International Symp. on Biotelemetry. H.R. Kimmich and H.J. Klewe, eds. International Society on Biotelemetry, Nijmegen, Netherlands.

Howey, P.W., T.E. Strikwerda, S. Mantel, M.R. Fuller, G.F. Gee, S.S. Klugman, W.S. Seegar, and F.P. Ward. 1987. A system for acquiring physiological telemetry data. Pp. 347 - 350 in Proc. 9th Internat. Symp. on Biotelem. H.P. Kimmich and M.R. Neuman, eds. International Soc. on Biotelemetry, Nijmegen, Netherlands.

Howey, P., M.R. Fuller, W. Seegar, K. Titus. 1989. A coded tracking telemetry system. Pp. 28, 103 - 107 in Proc. 10th Intern. Symp. on Biotelemetry. C.J. Amlaner, Jr., ed. Univ. of Arkansas Press, Fayetteville.

Keller, C.M.E., M.R. Fuller. 1995. Comparison of birds detected from roadside and off-road point counts in the Shenandoah National Park. USDA Forest Service Gen. Tech. Rep. PSW-GTR-149. pp 111-115.

Kerlinger, P., 1989: Flight Strategies of Migrating Hawks. University of Chicago Press, 375 pp.

Kuechle, V.B., M.R. Fuller, R.A. Reichle, R.J. Schuster, and G. E. Duke. 1987. Telemetry of gastric motility data from owls. Pp. 363 - 366 in Proc. 9th Internat. Symp. on Biotelem. H.P. Kimmich and M.R. Neuman, eds. International Soc. on Biotelemetry, Nijmegen, Netherlands.

Larkin, R. P., 1982: Spatial distribution of migrating birds and small-scale atmospheric motion. In Avian navigation, Springer-Verlag, 28-37.

Miller, R.I. (ed.). 1994. Mapping the Diversity of Nature. Chapman and Hall, London.

Mosher, J.A., K. Titus, and M.R. Fuller. 1986. Developing a practical model to predict nesting habitat of woodland hawks. Pp. 31 - 35 in Wildlife 2000: modeling habitat relationships for terrestrial vertebrates. J. Verner, M.L. Morrison, and C.J. Ralph, eds. Univ. of Wisconsin Press.

Seegar, W.S., P.N. Cutchis, M.R. Fuller, J.J. Suter, V. Bhatnager, and J.S. Wall. 1996. Fifteen years of satellite tracking development and application to wildlife research and conservation. John Hopkins APL Technical Digest. 17:305-315.

Stotz, D.F., J.W. Fitzpatrick, T.A. Parker III, D.K. Moskovits. 1996. Neotropical Birds: Ecology and Conservation. University of Chicago Press, Chicago.

U.S. Department of the Interior. 1996. Effects of military training and fire in the Snake River Birds of Prey National Conservation Area. BLM/IDARNG Research Final Report. U.S. Geological Survey, Biological Resources Division, Snake River Field Station, Boise, ID 130pp.

Other related literature:

Buehler, D.A., J.D. Fraser, M.R. Fuller, L.S. McAllister, and J.K.A. Seegar. 1995. Captive and field-tested radio transmitter attachments for bald eagles. J. Field Ornith. 66:173-180.

Ellis, D.H., D.G. Smith, G.H. Olsen, M.R. Fuller, S.E. Landfried, H. Higuchi, C.H. Vermillion. 1992. Progress in satellite tracking cranes. Proc. North Am. Crane Workshop. 6:57-61.

Fuller, M.R., H.H. Obrecht, C.J. Pennycuick, and F. Schafner. 1989. Aerial tracking of tropic birds over the Caribbean Sea. Pp. 133 - 138 in Proc. 10th Intern. Symp. on Biotelemetry. C.J. Amlaner, Jr., ed. Univ. of Arkansas Press, Fayetteville.

Fuller, T.K., M.R. Fuller, and R.M. DeGraaf. 1997. Why do international research and management? Wildl. Soc. Bull. 25:74-77.

Geissler, P.H. and M.R. Fuller. 1985. Detecting and displaying the structure of an animal's home range. Statistical Computing Section, pp. 378 - 383 in Proc. Amer. Statistical Assoc. Wash., D.C.

Geissler, P.H. and M.R. Fuller. 1986. Estimation of the proportion of an area occupied by an animal species. Survey Research Methods Secion, pages 533 - 537 in Proc. Amer. Statistical Assoc.

Olsen, G.H., D.H. Ellis, S.E. Landfried, L.J. Miller, S.S. Klugman, M.R. Fuller, C.H. Vermillion. 1992. Behavior of Sandhill cranes harnessed with different satellite transmitters. Proc. North Am. Crane Workshop. 6:50-56.

Samuel, M.D. and M.R. Fuller. 1994. Wildlife radio telemetry. Pages 370-418 in T.A. Bookout, ed. Research and management techniques for wildlife and habitats. Fifth ed. The Wildlife Soc., Bethesda, Md.

Scott, J.M., B. Csuti, K. Smith, J.E. Estes and S. Caicco. 1991. Gap analysis of species richness and vegetation cover: an integrated biodiversity conservation strategy. pp. 282-297 in Balancing on the Brink of Extinction: the Endangered Species Act and Lessons for the Future, K.A. Kohm (ed.). Island Press, Washington, DC.

APPENDIX

Raw PTT data

ID	PROG	S	LC	D_DATE	D_TIME	D_LAT	D_LON	I_DATE	I_TIME	GPS_DATE	GPS_TIME	LATITUDE	LONGITUDE	ALT	CRSE	SPD	STATE
05707	00381	H	B	5/16/98	17:43:42	33.250	-106.412	5/16/98	17:42:12	5/15/98	01:26:20	33.1908	-106.4795	78	0	0	37 (51m-75m 3N)
05707	00381	H	B	5/16/98	17:43:42	33.250	-106.412	5/16/98	17:45:12	5/15/98	07:39:08	33.1900	-106.4760	481	0	0	17 (0m-26m 3N)
05707	00381	H	A	5/18/98	01:35:09	33.212	-106.484	5/18/98	01:38:54	5/16/98	02:02:54	33.1792	-106.4897	509	0	0	37 (51m-75m 3N)
05707	00381	H	0	5/18/98	03:14:12	33.261	-106.325	5/18/98	03:11:57	5/17/98	02:25:13	33.2353	-106.4923	85	0	0	45 (76m-100m 2N)
05707	00381	H	0	5/18/98	03:14:12	33.261	-106.325	5/18/98	03:16:27	5/16/98	08:01:37	33.1898	-106.5015	75	0	0	27 (26m-50m 3N)
05707	00381	H	0	5/18/98	03:14:12	33.261	-106.325	5/18/98	03:19:27	5/16/98	20:20:41	33.2073	-106.4897	249	0	0	29 (26m-50m 4N)
05707	00381	H	0	5/18/98	03:14:12	33.261	-106.325	5/18/98	03:19:27	5/17/98	14:38:49	33.2292	-106.4830	184	0	0	27 (26m-50m 3N)
05707	00381	J	1	5/19/98	08:38:04	33.416	-106.358	5/19/98	08:39:34	5/17/98	08:31:37	33.2030	-106.4695	111	0	0	39 (51m-75m 4N)
05707	00381	J	0	5/19/98	10:16:18	33.437	-106.352	5/19/98	10:17:03	5/18/98	02:55:22	33.2255	-106.4767	205	0	0	37 (51m-75m 3N)
05707	00381	J	0	5/19/98	10:16:18	33.437	-106.352	5/19/98	10:18:33	5/17/98	20:44:49	33.2367	-106.4892	180	0	0	29 (26m-50m 4N)
05707	00381	D	A	5/20/98	14:23:07	33.448	-106.360	5/20/98	14:20:52	5/18/98	09:00:52	33.3002	-106.4328	100	0	0	35 (51m-75m 2N)
05707	00381	J	0	5/21/98	21:21:18	33.448	-106.444	5/21/98	21:20:33	5/18/98	15:08:37	33.3517	-106.3882	208	0	0	27 (26m-50m 3N)
05707	00381	J	0	5/21/98	21:21:18	33.448	-106.444	5/21/98	21:22:03	5/19/98	03:25:52	33.3840	-106.3550	521	0	0	35 (51m-75m 2N)
05707	00381	D	A	5/21/98	23:40:05	33.459	-106.372	5/21/98	23:42:20	5/19/98	09:29:00	33.4353	-106.3633	106	0	0	29 (26m-50m 4N)
05707	00381	D	2	5/23/98	00:58:03	33.469	-106.349	5/23/98	00:55:48	5/19/98	15:36:06	33.4553	-106.3700	94	0	0	27 (26m-50m 3N)
05707	00381	D	2	5/23/98	00:58:03	33.469	-106.349	5/23/98	00:57:17	5/19/98	21:45:47	33.4572	-106.3745	318	0	0	27 (26m-50m 3N)
05707	00381	H	3	5/23/98	03:51:17	33.497	-106.361	5/23/98	03:49:47	5/20/98	09:58:19	33.4443	-106.3680	345	0	0	35 (51m-75m 2N)
05707	00381	H	3	5/23/98	03:51:17	33.497	-106.361	5/23/98	03:51:17	5/20/98	03:51:24	33.4573	-106.3518	291	0	0	37 (51m-75m 3N)
05707	00381	J	3	5/24/98	09:24:35	33.515	-106.359	5/24/98	09:21:35	5/20/98	16:15:31	33.4572	-106.3827	774	0	0	37 (51m-75m 3N)
05707	00381	D	1	5/24/98	12:56:23	33.512	-106.349	5/24/98	12:53:23	5/22/98	04:46:13	33.4720	-106.4035	72	0	0	37 (51m-75m 3N)
05707	00381	D	1	5/24/98	12:56:23	33.512	-106.349	5/24/98	12:54:53	5/21/98	22:40:46	33.4558	-106.3558	183	0	0	23 (26m-50m 1N)
05707	00381	D	1	5/24/98	12:56:23	33.512	-106.349	5/24/98	12:57:53	5/22/98	10:53:20	33.4653	-106.3860	139	0	0	27 (26m-50m 3N)
05707	00381	H	0	5/25/98	15:53:49	33.505	-106.347	5/25/98	15:59:49	5/23/98	11:22:21	33.4932	-106.3708	124	0	0	37 (51m-75m 3N)
05707	00381	H	2	5/25/98	17:32:48	33.512	-106.349	5/25/98	17:29:48	5/23/98	23:35:06	33.5132	-106.3578	170	0	0	27 (26m-50m 3N)
05707	00381	H	2	5/25/98	17:32:48	33.512	-106.349	5/25/98	17:32:48	5/23/98	05:14:15	33.4940	-106.3613	73	0	0	27 (26m-50m 3N)
05707	00381	J	3	5/26/98	20:25:51	33.513	-106.357	5/26/98	20:28:06	5/24/98	11:51:50	33.5140	-106.3472	204	0	0	27 (26m-50m 3N)
05707	00381	J	3	5/26/98	20:25:51	33.513	-106.357	5/26/98	20:29:36	5/24/98	05:40:45	33.5098	-106.3655	143	0	0	35 (51m-75m 2N)
05707	00381	D	2	5/26/98	23:30:21	33.513	-106.361	5/26/98	23:31:06	5/24/98	17:57:57	33.5072	-106.3465	135	0	0	27 (26m-50m 3N)
05707	00381	H						5/27/98	01:25:38	5/25/98	06:15:12	33.5128	-106.3438	455	0	0	29 (26m-50m 4N)
05707	00381	H	2	5/28/98	04:31:10	33.514	-106.356	5/28/98	04:34:10	5/26/98	00:34:50	33.5110	-106.3550	228	0	0	27 (26m-50m 3N)
05707	00381	H	2	5/28/98	04:31:10	33.514	-106.356	5/28/98	04:35:40	5/25/98	12:17:46	33.4973	-106.3507	242	0	0	37 (51m-75m 3N)
05707	00381	J	1	5/28/98	08:40:17	33.543	-106.372	5/28/98	08:40:17	5/26/98	06:39:43	33.5152	-106.3498	161	0	0	19 (0m-26m 4N)
05707	00381	J	1	5/28/98	08:40:17	33.543	-106.372	5/28/98	08:41:47	5/26/98	12:44:42	33.5170	-106.3482	101	0	0	19 (0m-26m 4N)
05707	00381	J	1	5/28/98	08:40:17	33.543	-106.372	5/28/98	08:43:17	5/27/98	01:01:12	33.5210	-106.3615	120	0	0	27 (26m-50m 3N)
05707	00381	J	1	5/29/98	10:07:45	33.529	-106.440	5/29/98	10:06:15	5/29/98	02:00:07	33.5165	-106.3638	376	0	0	27 (26m-50m 3N)
05707	00381	J	1	5/29/98	10:07:45	33.529	-106.440	5/29/98	10:10:45	5/28/98	01:26:37	33.5157	-106.3492	128	0	0	37 (51m-75m 3N)
05707	00381	J	1	5/29/98	10:07:45	33.529	-106.440	5/29/98	10:10:45	5/28/98	19:49:47	33.5082	-106.3565	119	0	0	27 (26m-50m 3N)
05707	00381	J	1	5/29/98	10:07:45	33.529	-106.440	5/29/98	10:13:45	5/28/98	07:35:44	33.4892	-106.3690	69	0	0	37 (51m-75m 3N)
05707	00381	J	1	5/29/98	10:07:45	33.529	-106.440	5/29/98	10:13:45	5/28/98	13:43:32	33.5148	-106.3420	102	0	0	37 (51m-75m 3N)
05707	00381	H	2	6/1/98	03:42:20	33.505	-106.352	6/1/98	03:37:05	5/29/98	20:30:41	33.5058	-106.3640	814	0	0	37 (51m-75m 3N)
05707	00381	H	2	6/1/98	03:42:20	33.505	-106.352	6/1/98	03:38:35	5/30/98	02:25:18	33.5045	-106.3582	128	0	0	37 (51m-75m 3N)

05707	00381	H	2	6/1/98 03:42:20	33.505	-106.352	6/1/98 03:44:35	5/30/98 08:31:23	33.5047	-106.3788	135	0	0	17 (0m-26m 3N)
05707	00381	J	3	6/2/98 11:06:56	33.499	-106.359	6/2/98 11:05:26	5/30/98 20:52:06	33.5055	-106.3635	414	0	0	33 (51m-75m 1N)
05707	00381	J	3	6/2/98 11:06:56	33.499	-106.359	6/2/98 11:06:56	5/31/98 02:54:53	33.4938	-106.3598	143	0	0	37 (51m-75m 3N)
05707	00381	J	3	6/2/98 11:06:56	33.499	-106.359	6/2/98 11:08:26	5/31/98 08:59:44	33.5038	-106.3747	76	0	0	27 (26m-50m 3N)
05707	00381	D	A	6/3/98 14:16:59	33.508	-106.354	6/3/98 14:18:29	6/1/98 21:42:41	33.5100	-106.3660	174	0	0	25 (26m-50m 2N)
05707	00381	H	3	6/3/98 15:42:29	33.513	-106.367	6/3/98 15:46:59	6/1/98 09:30:42	33.5028	-106.3625	174	0	0	29 (26m-50m 4N)
05707	00381	H	3	6/3/98 15:42:29	33.513	-106.367	6/3/98 15:48:29	5/31/98 21:16:45	33.5205	-106.3653	374	0	0	57 (101m-200m 3N)
05707	00381	H	B	6/3/98 17:24:35	33.527	-106.371	6/3/98 17:22:20	6/2/98 16:04:38	33.5012	-106.3537	86	0	0	15 (0m-26m 2N)
05707	00381	J	3	6/4/98 20:27:09	33.511	-106.357	6/4/98 20:29:24	6/2/98 22:14:03	33.4948	-106.3650	293	0	0	33 (51m-75m 1N)
05707	00381	J	3	6/4/98 20:27:09	33.511	-106.357	6/4/98 20:29:24	6/4/98 16:59:08	33.5127	-106.3510	146	0	0	27 (26m-50m 3N)
05707	00381	J	A	6/4/98 22:06:54	33.515	-106.345	6/4/98 22:05:24	6/3/98 04:18:19	33.5072	-106.3685	188	0	0	37 (51m-75m 3N)
05707	00381	J	A	6/4/98 22:06:54	33.515	-106.345	6/4/98 22:06:54	6/3/98 10:22:37	33.5070	-106.3427	80	0	0	37 (51m-75m 3N)
05707	00381	D	3	6/4/98 23:32:40	33.509	-106.358	6/4/98 23:33:25	6/3/98 16:34:18	33.5097	-106.3560	175	0	0	45 (76m-100m 2N)
05707	00381	D	3	6/4/98 23:32:40	33.509	-106.358	6/4/98 23:33:25	6/4/98 10:51:42	33.5105	-106.3530	65	0	0	29 (26m-50m 4N)
05707	00381	D	3	6/4/98 23:32:40	33.509	-106.358	6/4/98 23:34:55	6/3/98 22:43:17	33.5095	-106.3598	282	0	0	27 (26m-50m 3N)
05707	00381	D	3	6/4/98 23:32:40	33.509	-106.358	6/4/98 23:36:25	6/4/98 04:46:37	33.5028	-106.3708	121	0	0	37 (51m-75m 3N)
05707	00381	J	2	6/12/98 10:57:52	33.494	-106.349	6/12/98 10:59:22	6/7/98 12:18:50	33.5142	-106.3565	81	0	0	27 (26m-50m 3N)
05707	00381	D	3	6/12/98 14:18:07	33.505	-106.363	6/12/98 14:17:22	6/7/98 06:10:53	33.5135	-106.3603	209	0	0	27 (26m-50m 3N)
05707	00381	H	3	6/12/98 15:31:31	33.506	-106.365	6/12/98 15:27:46	6/7/98 18:33:19	33.5083	-106.3475	515	0	0	27 (26m-50m 3N)
05707	00381	H	2	6/13/98 15:17:52	33.509	-106.386	6/13/98 15:17:52	6/11/98 01:58:37	33.4952	-106.3677	301	0	0	39 (51m-75m 4N)
05707	00381	J	3	6/13/98 20:26:06	33.507	-106.389	6/13/98 20:23:51	6/11/98 08:05:31	33.4810	-106.3687	114	0	0	35 (51m-75m 2N)
05707	00381	J	2	6/13/98 22:07:24	33.514	-106.374	6/13/98 22:07:24	6/12/98 02:24:44	33.4662	-106.3727	108	0	0	39 (51m-75m 4N)
05707	00381	J	2	6/13/98 22:07:24	33.514	-106.374	6/13/98 22:08:54	6/11/98 14:16:08	33.4828	-106.3708	314	0	0	37 (51m-75m 3N)
05707	00381	H					6/15/98 04:11:55	6/12/98 14:44:13	33.5052	-106.3580	310	0	0	37 (51m-75m 3N)
05707	00381	J	0	6/16/98 10:12:10	33.513	-106.321	6/16/98 10:13:40	6/13/98 02:53:33	33.5053	-106.3718	73	0	0	25 (26m-50m 2N)
05707	00381	J	0	6/16/98 10:12:10	33.513	-106.321	6/16/98 10:15:10	6/13/98 15:07:19	33.5105	-106.3587	178	0	0	37 (51m-75m 3N)
05707	00381	J	0	6/16/98 10:12:10	33.513	-106.321	6/16/98 10:16:40	6/13/98 21:17:24	33.4982	-106.3850	177	0	0	35 (51m-75m 2N)
05707	00381	J	0	6/16/98 10:12:10	33.513	-106.321	6/16/98 10:18:10	6/14/98 03:25:13	33.5018	-106.3688	211	0	0	29 (26m-50m 4N)
05707	00381	D	3	6/17/98 14:08:24	33.513	-106.350	6/17/98 14:11:25	6/14/98 09:30:19	33.5018	-106.3812	157	0	0	29 (26m-50m 4N)
05707	00381	H	1	6/17/98 16:08:24	33.496	-106.302	6/17/98 16:03:54	6/16/98 16:39:21	33.5108	-106.3523	431	0	0	27 (26m-50m 3N)
05707	00381	H	1	6/17/98 16:08:24	33.496	-106.302	6/17/98 16:05:24	6/17/98 04:46:01	33.5157	-106.3410	113	0	0	29 (26m-50m 4N)
05707	00381	H	1	6/17/98 16:08:24	33.496	-106.302	6/17/98 16:12:54	6/16/98 04:16:37	33.5105	-106.3448	110	0	0	27 (26m-50m 3N)
05707	00381	H	1	6/17/98 16:08:24	33.496	-106.302	6/17/98 16:12:54	6/16/98 10:26:13	33.5183	-106.3467	80	0	0	27 (26m-50m 3N)
05707	00381	H	B	6/17/98 17:46:42	33.604	-106.198	6/17/98 17:45:57	6/14/98 15:36:23	33.5062	-106.3545	162	0	0	25 (26m-50m 2N)
05707	00381	H	B	6/17/98 17:46:42	33.604	-106.198	6/17/98 17:45:57	6/17/98 17:03:40	33.4975	-106.3597	201	0	0	35 (51m-75m 2N)
05707	00381	H	B	6/17/98 17:46:42	33.604	-106.198	6/17/98 17:47:27	6/15/98 09:59:08	33.5240	-106.3850	144	0	0	37 (51m-75m 3N)
05707	00381	H	B	6/17/98 17:46:42	33.604	-106.198	6/17/98 17:47:27	6/17/98 10:51:32	33.5223	-106.3383	80	0	0	27 (26m-50m 3N)
05707	00381	J	B	6/18/98 19:31:25	33.490	-106.356	6/18/98 19:32:55	6/18/98 11:43:52	33.5347	-106.3762	929	0	0	37 (51m-75m 3N)
05707	00381	J	B	6/18/98 19:31:25	33.490	-106.356	6/18/98 19:32:55	6/18/98 17:40:19	33.5095	-106.3412	117	0	0	29 (26m-50m 4N)
05707	00381	H	3	6/20/98 15:31:06	33.523	-106.369	6/20/98 15:35:36	6/19/98 18:19:36	33.5092	-106.3565	108	0	0	37 (51m-75m 3N)
05707	00381	H	3	6/20/98 15:31:06	33.523	-106.369	6/20/98 15:35:36	6/20/98 00:36:35	33.5107	-106.3620	763	0	0	27 (26m-50m 3N)
05707	00381	H	2	6/20/98 17:11:36	33.519	-106.354	6/20/98 17:14:36	6/19/98 12:13:54	33.5247	-106.3377	201	0	0	47 (76m-100m 3N)

05707	00381	H	2	6/20/98 17:11:36	33.519	-106.354	6/20/98 17:14:36	6/20/98 06:31:01	33.5170	-106.3432	73	0	0 29 (26m-50m 4N)
05707	00381	H	2	6/20/98 17:11:36	33.519	-106.354	6/20/98 17:16:06	6/19/98 06:06:44	33.5130	-106.3472	375	0	0 29 (26m-50m 4N)
05707	00381	H	2	6/20/98 17:11:36	33.519	-106.354	6/20/98 17:16:06	6/20/98 12:38:07	33.5143	-106.3527	133	0	0 29 (26m-50m 4N)
05707	00381	J	B	6/21/98 20:37:52	33.536	-106.354	6/21/98 20:40:52	6/21/98 13:22:49	33.5228	-106.3613	523	0	0 37 (51m-75m 3N)
05707	00381	J	B	6/21/98 20:37:52	33.536	-106.354	6/21/98 20:40:52	6/21/98 19:34:30	33.5168	-106.3585	622	0	0 29 (26m-50m 4N)
05707	00381	H	2	6/23/98 14:51:42	33.509	-106.349	6/23/98 14:50:12	6/23/98 02:13:06	33.5133	-106.3583	219	0	0 27 (26m-50m 3N)
05707	00381	J	3	6/23/98 21:57:49	33.509	-106.335	6/23/98 21:55:34	6/23/98 14:23:07	33.5035	-106.3198	95	0	0 45 (76m-100m 2N)
05707	00381	J	3	6/23/98 21:57:49	33.509	-106.335	6/23/98 21:57:04	6/22/98 14:00:42	33.5128	-106.3582	268	0	0 27 (26m-50m 3N)
05707	00381	J	3	6/23/98 21:57:49	33.509	-106.335	6/23/98 21:57:04	6/23/98 08:16:43	33.5177	-106.3365	75	0	0 29 (26m-50m 4N)
05707	00381	J	3	6/23/98 21:57:49	33.509	-106.335	6/23/98 22:01:34	6/22/98 07:50:50	33.5177	-106.3607	281	0	0 27 (26m-50m 3N)
05707	00381	H	B	6/24/98 16:20:37	33.545	-106.194	6/24/98 16:22:07	6/24/98 09:02:02	33.5078	-106.3283	501	0	0 27 (26m-50m 3N)
05707	00381	H	1	6/25/98 16:08:39	33.491	-106.298	6/25/98 16:13:54	6/25/98 09:36:44	33.5082	-106.3360	293	0	0 27 (26m-50m 3N)
05707	00381	H	1	6/25/98 16:08:39	33.491	-106.298	6/25/98 16:13:54	6/25/98 15:43:52	33.5132	-106.3555	115	0	0 27 (26m-50m 3N)
05707	00381	H	2	6/27/98 17:24:09	33.509	-106.354	6/27/98 17:26:24	6/27/98 17:00:51	33.5045	-106.3515	472	0	0 37 (51m-75m 3N)
05707	00381	J	A	6/28/98 11:20:52	33.508	-106.345	6/28/98 11:24:37	6/28/98 05:22:38	33.5072	-106.3475	457	0	0 27 (26m-50m 3N)
05707	00381	K	1	6/30/98 15:00:00	33.486	-106.271	6/30/98 15:01:30	6/29/98 18:23:12	33.5112	-106.3568	763	0	0 37 (51m-75m 3N)
05707	00381	K	1	7/5/98 02:31:27	33.511	-106.347	7/5/98 02:29:12	7/3/98 01:59:44	33.4965	-106.3562	176	0	0 35 (51m-75m 2N)
05707	00381	K	1	7/5/98 02:31:27	33.511	-106.347	7/5/98 02:36:42	7/2/98 07:38:13	33.5030	-106.3755	285	0	0 27 (26m-50m 3N)
05707	00381	H					7/5/98 03:16:43	7/2/98 13:47:46	33.5032	-106.3573	253	0	0 35 (51m-75m 2N)
05707	00381	H					7/5/98 03:21:13	7/3/98 14:12:51	33.5088	-106.3550	240	0	0 29 (26m-50m 4N)
05707	00381	H					7/5/98 03:21:13	7/4/98 02:29:19	33.5110	-106.3642	190	0	0 37 (51m-75m 3N)
05707	00381	H					7/5/98 03:24:13	7/3/98 08:04:13	33.5063	-106.3550	87	0	0 29 (26m-50m 4N)
05707	00381	J	1	7/6/98 09:52:21	33.513	-106.371	7/6/98 09:46:21	7/4/98 14:43:36	33.5127	-106.3630	327	0	0 27 (26m-50m 3N)
05707	00381	J	1	7/6/98 09:52:21	33.513	-106.371	7/6/98 09:55:21	7/4/98 08:33:14	33.5057	-106.3597	63	0	0 17 (0m-26m 3N)
05707	00381	H	2	7/7/98 15:18:45	33.508	-106.356	7/7/98 15:14:15	7/5/98 09:03:01	33.5053	-106.3447	87	0	0 17 (0m-26m 3N)
05707	00381	H	2	7/7/98 15:18:45	33.508	-106.356	7/7/98 15:23:15	7/5/98 02:55:38	33.5040	-106.3470	79	0	0 37 (51m-75m 3N)
05707	00381	H	2	7/7/98 17:00:19	33.499	-106.345	7/7/98 16:57:19	7/6/98 03:23:13	33.5045	-106.3508	214	0	0 29 (26m-50m 4N)
05707	00381	H	2	7/7/98 17:00:19	33.499	-106.345	7/7/98 16:57:19	7/6/98 21:52:56	33.5262	-106.3483	601	0	0 37 (51m-75m 3N)
05707	00381	H	2	7/7/98 17:00:19	33.499	-106.345	7/7/98 17:00:19	7/5/98 15:08:44	33.5020	-106.3492	68	0	0 27 (26m-50m 3N)
05707	00381	H	2	7/7/98 17:00:19	33.499	-106.345	7/7/98 17:00:19	7/7/98 09:57:43	33.5160	-106.3457	162	0	0 37 (51m-75m 3N)
05707	00381	H	2	7/7/98 17:00:19	33.499	-106.345	7/7/98 17:04:49	7/5/98 21:17:12	33.4995	-106.3582	220	0	0 29 (26m-50m 4N)
05707	00381	K					7/8/98 17:03:18	7/8/98 10:40:14	33.4955	-106.3367	424	0	0 39 (51m-75m 4N)
05707	00381	H					7/10/98 16:27:37	7/10/98 11:37:45	33.4960	-106.3545	138	0	0 25 (26m-50m 2N)
05707	00381	H					7/10/98 18:02:39	7/10/98 05:36:00	33.4985	-106.3483	402	0	0 29 (26m-50m 4N)
05707	00381	H					7/10/98 18:02:39	7/10/98 17:47:15	33.4915	-106.3472	104	0	0 35 (51m-75m 2N)
05707	00381	H	2	7/11/98 17:49:49	33.489	-106.321	7/11/98 17:51:19	7/11/98 12:24:03	33.5413	-106.3350	370	0	0 37 (51m-75m 3N)
05707	00381	H	2	7/11/98 17:49:49	33.489	-106.321	7/11/98 17:52:49	7/11/98 12:19:47	33.4987	-106.3350	370	0	0 37 (51m-75m 3N)
05707	00381	J	B	7/14/98 21:27:29	33.409	-106.785	7/14/98 21:22:59	7/14/98 01:48:44	33.5047	-106.2845	98	0	0 27 (26m-50m 3N)
05707	00381	J	B	7/14/98 21:27:29	33.409	-106.785	7/14/98 21:22:59	7/14/98 07:55:09	33.5070	-106.2923	122	0	0 27 (26m-50m 3N)
05707	00381	J	B	7/14/98 21:27:29	33.409	-106.785	7/14/98 21:28:59	7/13/98 13:36:02	33.4938	-106.2922	131	0	0 27 (26m-50m 3N)
05707	00381	J	B	7/14/98 21:27:29	33.409	-106.785	7/14/98 21:28:59	7/14/98 14:09:56	33.5073	-106.2850	645	0	0 55 (101m-200m 2N)
05707	00381	K	2	7/15/98 16:12:25	33.507	-106.296	7/15/98 16:15:25	7/15/98 08:38:02	33.5030	-106.2897	406	0	0 27 (26m-50m 3N)

05707	00381	K	2	7/15/98 16:12:25	33.507	-106.296	7/15/98 16:15:25	7/15/98 14:52:53	33.5133	-106.3095	691	0	0 25 (26m-50m 2N)
05707	00381	H	2	7/16/98 16:48:40	33.473	-106.301	7/16/98 16:53:55	7/16/98 09:14:22	33.5140	-106.2985	302	0	0 37 (51m-75m 3N)
05707	00381	H	A	7/17/98 16:37:26	33.490	-106.343	7/17/98 16:39:41	7/17/98 09:53:38	33.5010	-106.3358	368	0	0 27 (26m-50m 3N)
05707	00381	H	A	7/17/98 16:37:26	33.490	-106.343	7/17/98 16:39:41	7/17/98 15:58:44	33.4863	-106.3537	68	0	0 27 (26m-50m 3N)
05707	00381	D	B	7/17/98 22:46:42	33.514	-106.395	7/17/98 22:48:12	7/17/98 22:16:10	33.5042	-106.3545	150	2	0 35 (51m-75m 2N)
05707	00381	J	3	7/19/98 09:10:37	33.477	-106.356	7/19/98 09:12:52	7/18/98 04:25:49	33.5082	-106.3580	121	0	0 37 (51m-75m 3N)
05707	00381	J	3	7/19/98 09:10:37	33.477	-106.356	7/19/98 09:14:22	7/17/98 22:16:10	33.5045	-106.3545	150	0	0 35 (51m-75m 2N)
05707	00381	H	2	7/20/98 15:58:24	33.475	-106.357	7/20/98 15:56:09	7/18/98 10:34:51	33.4873	-106.3393	227	0	0 27 (26m-50m 3N)
05707	00381	H	2	7/20/98 15:58:24	33.475	-106.357	7/20/98 15:56:09	7/20/98 11:33:37	33.4515	-106.3288	552	0	0 27 (26m-50m 3N)
05707	00381	K					7/20/98 15:57:39	7/18/98 16:38:50	33.5010	-106.3578	105	0	0 29 (26m-50m 4N)
05707	00381	K					7/20/98 15:57:39	7/20/98 05:32:23	33.4712	-106.3340	842	0	0 37 (51m-75m 3N)
05707	00381	H	2	7/20/98 15:58:24	33.475	-106.357	7/20/98 16:02:09	7/19/98 11:00:44	33.4820	-106.3675	98	0	0 37 (51m-75m 3N)
05707	00381	H	2	7/20/98 15:58:24	33.475	-106.357	7/20/98 16:02:09	7/19/98 17:07:43	33.4312	-106.3700	83	0	0 47 (76m-100m 3N)
05707	00381	H	2	7/20/98 15:58:24	33.475	-106.357	7/20/98 16:03:39	7/19/98 05:02:20	33.4937	-106.3805	791	0	0 47 (76m-100m 3N)
05707	00381	H	2	7/20/98 15:58:24	33.475	-106.357	7/20/98 16:03:39	7/19/98 23:24:10	33.4702	-106.3555	707	0	0 37 (51m-75m 3N)
05707	00381	K	B	7/21/98 13:55:48	33.427	-106.547	7/21/98 13:56:33	7/21/98 06:02:43	33.4673	-106.3088	373	0	0 29 (26m-50m 4N)
05707	00381	K	B	7/21/98 13:55:48	33.427	-106.547	7/21/98 13:56:33	7/21/98 12:08:30	33.4705	-106.3198	115	0	0 27 (26m-50m 3N)
05707	00381	D	2	7/22/98 14:35:54	33.499	-106.363	7/22/98 14:35:54	7/22/98 06:42:44	33.4793	-106.3645	482	0	0 39 (51m-75m 4N)
05707	00381	D	2	7/22/98 14:35:54	33.499	-106.363	7/22/98 14:38:54	7/22/98 12:52:21	33.4915	-106.3623	456	0	0 27 (26m-50m 3N)
05707	00381	J	1	7/24/98 21:16:31	33.502	-106.395	7/24/98 21:14:16	7/23/98 13:26:43	33.4878	-106.3612	231	0	0 27 (26m-50m 3N)
05707	00381	J	1	7/24/98 21:16:31	33.502	-106.395	7/24/98 21:14:16	7/24/98 13:49:16	33.5083	-106.3738	66	0	0 25 (26m-50m 2N)
05707	00381	J	1	7/24/98 21:16:31	33.502	-106.395	7/24/98 21:15:46	7/23/98 19:34:08	33.4927	-106.3562	244	0	0 27 (26m-50m 3N)
05707	00381	J	1	7/24/98 21:16:31	33.502	-106.395	7/24/98 21:15:46	7/24/98 07:43:44	33.5047	-106.3710	98	0	0 27 (26m-50m 3N)
05707	00381	J	1	7/24/98 21:16:31	33.502	-106.395	7/24/98 21:17:16	7/24/98 01:41:19	33.4955	-106.3562	313	0	0 35 (51m-75m 2N)
05707	00381	J	1	7/24/98 21:16:31	33.502	-106.395	7/24/98 21:21:46	7/23/98 07:20:43	33.5065	-106.3655	475	0	0 39 (51m-75m 4N)
05707	00381	J	1	7/24/98 21:16:31	33.502	-106.395	7/24/98 21:21:46	7/24/98 20:00:42	33.5067	-106.3635	148	0	0 19 (0m-26m 4N)
05707	00381	K	3	7/25/98 15:54:01	33.502	-106.386	7/25/98 15:57:46	7/25/98 08:26:43	33.5148	-106.3852	381	0	0 19 (0m-26m 4N)
05707	00381	K	3	7/25/98 15:54:01	33.502	-106.386	7/25/98 15:57:46	7/25/98 14:32:13	33.5035	-106.3898	105	0	0 19 (0m-26m 4N)
05707	00381	J	2	7/26/98 09:31:42	33.479	-106.384	7/26/98 09:29:27	7/26/98 03:04:13	33.4777	-106.3737	167	0	0 19 (0m-26m 4N)
05707	00381	J	2	7/26/98 09:31:42	33.479	-106.384	7/26/98 09:35:27	7/26/98 09:12:43	33.4783	-106.3738	68	0	0 19 (0m-26m 4N)
05707	00381	H	A	7/28/98 17:38:49	33.421	-106.314	7/28/98 17:37:19	7/27/98 03:45:20	33.4628	-106.3800	341	0	0 37 (51m-75m 3N)
05707	00381	H	A	7/28/98 17:38:49	33.421	-106.314	7/28/98 17:37:19	7/28/98 10:16:14	33.4325	-106.3473	70	0	0 37 (51m-75m 3N)
05707	00381	H	A	7/28/98 17:38:49	33.421	-106.314	7/28/98 17:38:49	7/27/98 09:51:08	33.4522	-106.3585	84	0	0 19 (0m-26m 4N)
05707	00381	H	A	7/28/98 17:38:49	33.421	-106.314	7/28/98 17:38:49	7/28/98 04:10:43	33.4285	-106.3383	104	0	0 29 (26m-50m 4N)
05707	00381	H	A	7/28/98 17:38:49	33.421	-106.314	7/28/98 17:40:19	7/27/98 22:15:37	33.4230	-106.3563	753	0	0 29 (26m-50m 4N)
05707	00381	D	1	7/30/98 13:18:57	33.440	-106.393	7/30/98 13:21:12	7/5/98 14:25:20	33.4363	-106.3498	236	0	0 35 (51m-75m 2N)
05707	00381	H	3	7/30/98 15:33:57	33.431	-106.367	7/30/98 15:31:42	7/30/98 11:23:44	33.4297	-106.3575	73	0	0 17 (0m-26m 3N)
05707	00381	K	2	7/30/98 15:43:42	33.426	-106.352	7/30/98 15:42:12	7/29/98 17:13:38	33.4293	-106.3642	549	0	0 15 (0m-26m 2N)
05707	00381	K	2	7/30/98 15:43:42	33.426	-106.352	7/30/98 15:42:12	7/29/98 23:14:24	33.4363	-106.3498	236	0	0 35 (51m-75m 2N)
05707	00381	H	0	7/30/98 17:13:42	33.430	-106.360	7/30/98 17:09:12	7/29/98 04:50:50	33.4300	-106.3620	224	0	0 29 (26m-50m 4N)
05707	00381	H	0	7/30/98 17:13:42	33.430	-106.360	7/30/98 17:18:12	7/29/98 10:58:14	33.4158	-106.3638	62	0	0 37 (51m-75m 3N)
05707	00381	H	0	7/30/98 17:13:42	33.430	-106.360	7/30/98 17:18:12	7/30/98 05:18:43	33.4295	-106.3617	134	0	0 19 (0m-26m 4N)

05707	00381	H					7/31/98 02:53:49	11/14/02 03:22:06	33.4312	-106.3663	125	0	0 35 (51m-75m 2N)
05707	00381	K	2	7/31/98 15:20:59	33.451	-106.355	7/31/98 15:23:59	7/31/98 12:20:36	33.4325	-106.3608	348	0	0 29 (26m-50m 4N)
05707	00381	H	B	7/31/98 17:01:29	33.644	-106.232	7/31/98 17:05:59	7/31/98 12:20:44	33.4325	-106.3622	348	0	0 29 (26m-50m 4N)
05707	00381	K	2	8/1/98 13:19:51	33.483	-106.360	8/1/98 13:18:21	6/13/98 17:49:54	33.4748	-106.3682	488	16	0 37 (51m-75m 3N)
05707	00381	D	B	8/1/98 14:13:06	33.447	-106.269	8/1/98 14:13:51	8/1/98 06:55:14	33.4748	-106.3682	488	0	0 37 (51m-75m 3N)
05707	00381	D	B	8/1/98 14:13:06	33.447	-106.269	8/1/98 14:13:51	8/1/98 13:03:07	33.4905	-106.3580	356	0	0 27 (26m-50m 3N)
05707	00381	K	0	8/3/98 15:51:36	33.473	-106.345	8/3/98 15:49:21	8/2/98 01:21:25	33.4930	-106.3703	134	0	0 35 (51m-75m 2N)
05707	00381	K	0	8/3/98 15:51:36	33.473	-106.345	8/3/98 15:49:21	8/3/98 14:07:16	33.4547	-106.3492	151	0	0 37 (51m-75m 3N)
05707	00381	K	0	8/3/98 15:51:36	33.473	-106.345	8/3/98 15:52:21	8/2/98 19:49:19	33.4848	-106.3588	406	0	0 37 (51m-75m 3N)
05707	00381	K	0	8/3/98 15:51:36	33.473	-106.345	8/3/98 15:53:51	8/2/98 13:44:07	33.5057	-106.4060	452	0	0 37 (51m-75m 3N)
05707	00381	K	0	8/3/98 15:51:36	33.473	-106.345	8/3/98 15:53:51	8/3/98 07:56:00	33.4748	-106.3542	81	0	0 29 (26m-50m 4N)
05707	00381	J	A	8/6/98 10:51:16	33.508	-106.365	8/6/98 10:52:46	8/6/98 03:41:11	33.4785	-106.3658	518	0	0 37 (51m-75m 3N)
05707	00381	J	A	8/6/98 10:51:16	33.508	-106.365	8/6/98 10:52:46	8/6/98 09:45:13	33.4975	-106.3553	158	0	0 37 (51m-75m 3N)
05707	00381	D	0	8/7/98 12:04:35	33.505	-106.388	8/7/98 12:08:20	8/7/98 04:20:38	33.5022	-106.3660	597	0	0 19 (0m-26m 4N)
05707	00381	D	0	8/7/98 12:04:35	33.505	-106.388	8/7/98 12:08:20	8/7/98 10:21:43	33.5080	-106.3703	61	0	0 27 (26m-50m 3N)
05707	00381	J					8/8/98 12:07:17	8/8/98 10:58:14	33.4828	-106.3703	204	0	0 37 (51m-75m 3N)
05707	00381	D	2	8/9/98 13:00:33	33.469	-106.362	8/9/98 13:05:03	8/9/98 05:29:38	33.4618	-106.3618	403	0	0 37 (51m-75m 3N)
05707	00381	D	2	8/9/98 13:00:33	33.469	-106.362	8/9/98 13:05:03	8/9/98 11:34:38	33.4718	-106.3623	99	0	0 27 (26m-50m 3N)
05707	00381	H	1	8/11/98 16:24:36	33.460	-106.350	8/11/98 16:23:51	8/10/98 06:05:44	33.4652	-106.3597	279	0	0 17 (0m-26m 3N)
05707	00381	H	1	8/11/98 16:24:36	33.460	-106.350	8/11/98 16:23:51	8/11/98 12:46:16	33.5078	-106.3798	585	0	0 27 (26m-50m 3N)
05707	00381	H	B	8/11/98 18:04:21	33.469	-106.359	8/11/98 18:02:51	8/10/98 12:13:52	33.4810	-106.3745	161	0	0 35 (51m-75m 2N)
05707	00381	J	B	8/11/98 19:39:00	33.464	-106.370	8/11/98 19:38:15	8/11/98 06:31:44	33.5025	-106.3690	77	0	0 29 (26m-50m 4N)
05707	00381	J	B	8/11/98 19:39:00	33.464	-106.370	8/11/98 19:39:45	8/11/98 00:28:21	33.5148	-106.3563	234	0	0 37 (51m-75m 3N)
05707	00381	H	A	8/12/98 03:46:34	33.481	-106.366	8/12/98 03:48:49	8/12/98 01:06:46	33.4728	-106.3692	249	0	0 37 (51m-75m 3N)
05707	00381	J	2	8/13/98 09:32:03	33.412	-106.302	8/13/98 09:38:48	8/13/98 08:07:15	33.4067	-106.2928	158	0	0 37 (51m-75m 3N)
05707	00381	J	B	8/14/98 09:23:09	33.396	-106.385	8/14/98 09:23:54	8/14/98 08:50:51	33.4270	-106.3157	194	0	0 13 (0m-26m 1N)
05707	00381	J	2	8/15/98 10:49:45	33.444	-106.308	8/15/98 10:55:45	8/15/98 03:17:14	33.4458	-106.3193	92	0	0 19 (0m-26m 4N)
05707	00381	J	2	8/15/98 10:49:45	33.444	-106.308	8/15/98 10:55:45	8/15/98 09:27:12	33.4460	-106.3192	83	0	0 19 (0m-26m 4N)
05707	00381	J	3	8/16/98 10:40:33	33.458	-106.315	8/16/98 10:45:03	8/16/98 10:02:49	33.4670	-106.3305	171	0	0 27 (26m-50m 3N)
05707	00381	J	A	8/17/98 12:07:55	33.429	-106.296	8/17/98 12:09:25	8/17/98 04:36:23	33.4077	-106.3272	500	0	0 47 (76m-100m 3N)
05707	00381	J	A	8/17/98 12:07:55	33.429	-106.296	8/17/98 12:09:25	8/17/98 10:39:13	33.4252	-106.3030	67	0	0 37 (51m-75m 3N)
05707	00381	J	A	8/18/98 11:59:20	33.421	-106.316	8/18/98 12:01:35	8/18/98 05:14:38	33.4332	-106.3325	505	0	0 27 (26m-50m 3N)
05707	00381	J	A	8/18/98 11:59:20	33.421	-106.316	8/18/98 12:01:35	8/18/98 11:18:01	33.4158	-106.3327	104	0	0 37 (51m-75m 3N)
05707	00381	K	A	8/19/98 13:21:25	33.460	-106.350	8/19/98 13:21:25	8/19/98 12:07:52	33.4680	-106.3443	804	0	0 47 (76m-100m 3N)
05707	00381	H	3	8/20/98 03:50:04	33.447	-106.324	8/20/98 03:53:49	8/20/98 00:20:47	33.4400	-106.3358	261	0	0 25 (26m-50m 2N)
05707	00381	H	A	8/20/98 17:52:51	33.424	-106.323	8/20/98 17:55:51	8/20/98 12:55:22	33.4513	-106.3343	764	0	0 37 (51m-75m 3N)
05707	00381	J	1	8/23/98 09:21:32	33.425	-106.325	8/23/98 09:28:17	8/23/98 02:35:50	33.4297	-106.3123	440	0	0 37 (51m-75m 3N)
05707	00381	J	1	8/23/98 09:21:32	33.425	-106.325	8/23/98 09:28:17	8/23/98 08:40:14	33.4403	-106.3237	99	0	0 37 (51m-75m 3N)
05707	00381	J	3	8/25/98 10:41:15	33.425	-106.281	8/25/98 10:47:15	8/25/98 03:48:45	33.4080	-106.2940	476	0	0 37 (51m-75m 3N)
05707	00381	J	3	8/25/98 10:41:15	33.425	-106.281	8/25/98 10:47:15	8/25/98 09:53:12	33.4287	-106.2955	140	0	0 27 (26m-50m 3N)
05707	00381	D	2	8/27/98 13:02:19	33.432	-106.321	8/27/98 13:00:04	8/27/98 05:18:14	33.4297	-106.3235	517	0	0 37 (51m-75m 3N)
05707	00381	D	2	8/27/98 13:02:19	33.432	-106.321	8/27/98 13:00:04	8/27/98 11:21:02	33.4345	-106.3168	81	0	0 37 (51m-75m 3N)

05707	00381	K	1	8/28/98 13:25:40	33.419	-106.336	8/28/98 13:27:55	8/28/98 05:50:45	33.4285	-106.3428	178	0	0 27 (26m-50m 3N)
05707	00381	K	1	8/28/98 13:25:40	33.419	-106.336	8/28/98 13:27:55	8/28/98 12:02:22	33.4252	-106.3322	267	0	0 27 (26m-50m 3N)
05707	00381	D	2	8/29/98 13:57:32	33.428	-106.310	8/29/98 14:01:17	8/29/98 12:43:13	33.4307	-106.3177	140	0	0 27 (26m-50m 3N)
05707	00381	D	A	8/30/98 15:15:17	33.444	-106.255	8/30/98 15:16:47	8/30/98 07:23:08	33.4208	-106.3097	316	0	0 27 (26m-50m 3N)
05707	00381	D	A	8/30/98 15:15:17	33.444	-106.255	8/30/98 15:16:47	8/30/98 13:30:15	33.4353	-106.3000	138	0	0 27 (26m-50m 3N)
05707	00381	J	2	8/31/98 20:56:27	33.432	-106.314	8/31/98 21:00:57	8/31/98 20:23:12	33.4380	-106.2950	372	0	0 29 (26m-50m 4N)
05707	00381	J	A	9/1/98 09:25:42	33.429	-106.326	9/1/98 09:27:57	9/1/98 09:00:49	33.4427	-106.3090	237	0	0 37 (51m-75m 3N)
05707	00381	J	3	9/2/98 10:54:22	33.412	-106.295	9/2/98 10:57:22	9/2/98 03:40:11	33.4197	-106.2903	383	0	0 37 (51m-75m 3N)
05707	00381	D	A	9/2/98 23:48:04	33.414	-106.329	9/2/98 23:46:34	9/2/98 22:16:30	33.3992	-106.3113	631	0	0 27 (26m-50m 3N)
05707	00381	D	3	9/3/98 12:08:32	33.413	-106.308	9/3/98 12:12:17	9/3/98 04:56:37	33.4085	-106.2982	1010	0	0 17 (0m-26m 3N)
05707	00381	D	3	9/3/98 12:08:32	33.413	-106.308	9/3/98 12:12:17	9/3/98 10:51:14	33.4158	-106.3142	90	0	0 27 (26m-50m 3N)
05707	00381	J	B	9/5/98 20:01:22	33.395	-106.311	9/5/98 20:02:52	9/5/98 12:42:22	33.4190	-106.3115	460	0	0 15 (0m-26m 2N)
05707	00381	J	A	9/6/98 08:28:01	33.435	-106.299	9/6/98 08:27:16	9/6/98 01:04:24	33.4032	-106.3052	212	0	0 27 (26m-50m 3N)
05707	00381	J	A	9/6/98 08:28:01	33.435	-106.299	9/6/98 08:27:16	9/6/98 07:12:13	33.4252	-106.2972	75	0	0 19 (0m-26m 4N)
05707	00381	J	B	9/6/98 21:27:46	33.347	-106.755	9/6/98 21:29:16	9/6/98 13:32:47	33.4288	-106.2920	342	0	0 25 (26m-50m 2N)
05707	00381	J	3	9/7/98 09:56:28	33.427	-106.311	9/7/98 09:56:28	9/7/98 02:36:44	33.4262	-106.2885	475	0	0 37 (51m-75m 3N)
05707	00381	J	1	9/7/98 21:17:18	33.404	-106.337	9/7/98 21:21:03	9/7/98 21:02:35	33.4102	-106.3092	98	0	0 33 (51m-75m 1N)
05707	00381	D					9/8/98 11:54:46	9/8/98 04:02:14	33.4293	-106.3122	576	0	0 27 (26m-50m 3N)
05707	00381	D					9/8/98 11:54:46	9/8/98 10:03:43	33.4180	-106.3002	62	0	0 27 (26m-50m 3N)
05707	00381	D	3	9/9/98 13:15:55	33.425	-106.331	9/9/98 13:21:55	9/9/98 05:57:14	33.4190	-106.3113	389	0	0 37 (51m-75m 3N)
05707	00381	D	3	9/9/98 13:15:55	33.425	-106.331	9/9/98 13:21:55	9/9/98 12:03:52	33.4203	-106.3157	181	0	0 27 (26m-50m 3N)
05707	00381	K	1	9/10/98 13:39:05	33.430	-106.311	9/10/98 13:43:35	9/10/98 06:18:22	33.4240	-106.3098	1063	0	0 27 (26m-50m 3N)
05707	00381	K	A	9/11/98 13:18:34	33.401	-106.326	9/11/98 13:21:34	9/11/98 11:45:32	33.4210	-106.3427	371	0	0 37 (51m-75m 3N)
05707	00381	H	A	9/12/98 14:48:15	33.406	-106.308	9/12/98 14:52:00	9/12/98 07:31:24	33.3927	-106.3082	433	0	0 27 (26m-50m 3N)
05707	00381	H	A	9/12/98 14:48:15	33.406	-106.308	9/12/98 14:52:00	9/12/98 13:38:25	33.4060	-106.3148	250	0	0 23 (26m-50m 1N)
05707	00381	H	1	9/13/98 14:33:34	33.429	-106.299	9/13/98 14:35:49	9/13/98 06:44:44	33.4103	-106.3157	337	0	0 27 (26m-50m 3N)
05707	00381	H	1	9/13/98 14:33:34	33.429	-106.299	9/13/98 14:35:49	9/13/98 12:56:37	33.4158	-106.3053	445	0	0 37 (51m-75m 3N)
05707	00381	H	2	9/16/98 17:19:21	33.438	-106.318	9/16/98 17:21:36	9/16/98 12:43:40	33.4100	-106.3087	584	0	0 37 (51m-75m 3N)
05707	00381	H	3	9/17/98 17:04:13	33.448	-106.325	9/17/98 17:07:13	9/17/98 13:18:58	33.4413	-106.3432	778	0	0 37 (51m-75m 3N)
05707	00381	J					9/17/98 21:06:25	9/17/98 19:18:21	33.4428	-106.3278	140	0	0 29 (26m-50m 4N)
05707	00381	H	3	9/19/98 04:13:25	33.465	-106.336	9/19/98 04:17:10	9/19/98 00:15:38	33.4600	-106.3405	247	0	0 25 (26m-50m 2N)
05707	00381	H	A	9/19/98 16:41:20	33.448	-106.315	9/19/98 16:45:50	9/19/98 12:45:40	33.4625	-106.3297	478	0	0 27 (26m-50m 3N)
05707	00381	K	3	9/21/98 14:39:41	33.436	-106.314	9/21/98 14:35:56	9/21/98 01:36:19	33.4267	-106.2933	202	0	0 37 (51m-75m 3N)
05707	00381	H					9/21/98 14:37:26	9/20/98 19:31:11	33.4452	-106.3083	252	0	0 39 (51m-75m 4N)
05707	00381	K	3	9/21/98 14:39:41	33.436	-106.314	9/21/98 14:38:56	9/20/98 01:09:51	33.4330	-106.3153	362	0	0 35 (51m-75m 2N)
05707	00381	K	3	9/21/98 14:39:41	33.436	-106.314	9/21/98 14:38:56	9/21/98 13:56:27	33.4340	-106.3088	439	0	0 27 (26m-50m 3N)
05707	00381	K	3	9/21/98 14:39:41	33.436	-106.314	9/21/98 14:40:26	9/21/98 07:43:36	33.4328	-106.2863	274	0	0 37 (51m-75m 3N)
05707	00381	D	A	9/23/98 22:47:46	33.410	-106.270	9/23/98 22:47:46	9/21/98 13:56:27	33.4340	-106.3088	439	0	0 27 (26m-50m 3N)
05707	00381	H	0	9/24/98 03:12:34	33.437	-106.366	9/24/98 03:07:19	9/21/98 07:43:36	33.4328	-106.2863	274	0	0 37 (51m-75m 3N)
05707	00381	H	0	9/24/98 03:12:34	33.437	-106.366	9/24/98 03:11:49	9/20/98 01:09:51	33.4330	-106.3153	362	0	0 35 (51m-75m 2N)
05707	00381	H	0	9/24/98 03:12:34	33.437	-106.366	9/24/98 03:17:49	9/20/98 19:31:11	33.4452	-106.3083	252	0	0 39 (51m-75m 4N)
05707	00381	H	A	9/25/98 04:41:16	33.429	-106.340	9/25/98 04:39:46	9/21/98 01:36:19	33.4267	-106.2933	202	0	0 37 (51m-75m 3N)

05707	00381	H	A	9/25/98 04:41:16	33.429	-106.340	9/25/98 04:44:16	9/22/98 02:04:43	33.4425	-106.3058	145	0	0 17 (0m-26m 3N)
05707	00381	J	2	9/25/98 09:58:25	33.450	-106.344	9/25/98 09:59:10	9/21/98 13:56:27	33.4340	-106.3088	439	0	0 27 (26m-50m 3N)
05707	00381	J	2	9/25/98 09:58:25	33.450	-106.344	9/25/98 10:02:10	9/24/98 09:09:13	33.4810	-106.3007	135	0	0 45 (76m-100m 2N)
05707	00381	J	A	9/26/98 11:30:11	33.447	-106.321	9/26/98 11:27:11	9/24/98 15:14:44	33.4468	-106.3280	107	0	0 27 (26m-50m 3N)
05707	00381	H	A	9/26/98 15:15:11	33.419	-106.326	9/26/98 15:16:41	9/24/98 21:20:32	33.4078	-106.3192	95	0	0 45 (76m-100m 2N)
05707	00381	H	A	9/26/98 15:15:11	33.419	-106.326	9/26/98 15:18:11	9/26/98 10:03:06	33.4488	-106.3322	157	0	0 27 (26m-50m 3N)
05707	00381	K	B	9/26/98 16:05:26	33.434	-106.163	9/26/98 16:04:41	9/25/98 15:45:14	33.4513	-106.3217	171	0	0 27 (26m-50m 3N)
05707	00381	H	2	9/26/98 16:54:25	33.431	-106.298	9/26/98 16:49:55	9/25/98 03:26:13	33.4373	-106.3353	71	0	0 37 (51m-75m 3N)
05707	00381	H	2	9/26/98 16:54:25	33.431	-106.298	9/26/98 16:49:55	9/25/98 21:53:49	33.4495	-106.3307	327	0	0 27 (26m-50m 3N)
05707	00381	H	2	9/26/98 16:54:25	33.431	-106.298	9/26/98 16:51:25	9/25/98 09:36:37	33.4547	-106.3430	88	0	0 27 (26m-50m 3N)
05707	00381	H	2	9/26/98 16:54:25	33.431	-106.298	9/26/98 16:58:55	9/26/98 03:55:38	33.4510	-106.3345	75	0	0 37 (51m-75m 3N)
05736	00381	H	0	5/16/98 16:04:18	33.355	-106.680	5/16/98 16:01:18	5/15/98 14:55:43	33.3527	-106.6175	101	0	0 29 (26m-50m 4N)
05736	00381	H	0	5/16/98 16:04:18	33.355	-106.680	5/16/98 16:01:18	5/15/98 21:02:18	33.3427	-106.6002	138	0	0 37 (51m-75m 3N)
05736	00381	H	0	5/16/98 16:04:18	33.355	-106.680	5/16/98 16:04:18	5/15/98 08:48:30	33.3378	-106.6192	105	0	0 37 (51m-75m 3N)
05736	00381	H	0	5/16/98 16:04:18	33.355	-106.680	5/16/98 16:05:48	5/15/98 02:38:12	33.3650	-106.6168	90	0	0 27 (26m-50m 3N)
05736	00381	D	1	5/17/98 23:28:08	33.356	-106.637	5/17/98 23:23:38	5/16/98 03:07:12	33.3535	-106.6108	70	0	0 35 (51m-75m 2N)
05736	00381	D	1	5/17/98 23:28:08	33.356	-106.637	5/17/98 23:26:38	5/16/98 15:24:52	33.3677	-106.6208	160	0	0 37 (51m-75m 3N)
05736	00381	D	1	5/17/98 23:28:08	33.356	-106.637	5/17/98 23:32:38	5/16/98 09:13:12	33.3487	-106.6165	67	0	0 19 (0m-26m 4N)
05736	00381	H	1	5/19/98 03:02:09	33.365	-106.604	5/19/98 03:06:39	5/17/98 15:48:42	33.3553	-106.6407	74	0	0 25 (26m-50m 2N)
05736	00381	H	1	5/19/98 03:02:09	33.365	-106.604	5/19/98 03:06:39	5/17/98 21:59:35	33.3610	-106.6370	121	0	0 29 (26m-50m 4N)
05736	00381	H	B	5/19/98 04:45:26	33.337	-106.712	5/19/98 04:44:41	5/17/98 09:42:37	33.3523	-106.6142	72	0	0 27 (26m-50m 3N)
05736	00381	H	B	5/19/98 04:45:26	33.337	-106.712	5/19/98 04:46:11	5/17/98 03:36:44	33.3523	-106.6177	76	0	0 29 (26m-50m 4N)
05736	00381	J	0	5/20/98 10:07:26	33.337	-106.535	5/20/98 10:05:56	5/18/98 04:06:31	33.3682	-106.6448	99	0	0 39 (51m-75m 4N)
05736	00381	J	0	5/20/98 10:07:26	33.337	-106.535	5/20/98 10:11:56	5/18/98 10:12:01	33.3540	-106.6385	72	0	0 29 (26m-50m 4N)
05736	00381	J	A	5/20/98 11:47:27	33.373	-106.620	5/20/98 11:47:27	5/19/98 04:35:30	33.3548	-106.6362	155	0	0 39 (51m-75m 4N)
05736	00381	J	A	5/20/98 11:47:27	33.373	-106.620	5/20/98 11:48:57	5/18/98 22:27:35	33.3558	-106.6418	284	0	0 17 (0m-26m 3N)
05736	00381	D	3	5/21/98 14:01:03	33.358	-106.623	5/21/98 14:08:33	5/20/98 11:09:30	33.3480	-106.6340	71	0	0 27 (26m-50m 3N)
05736	00381	D	3	5/21/98 14:01:03	33.358	-106.623	5/21/98 14:08:33	5/20/98 17:17:19	33.3312	-106.6470	105	0	0 45 (76m-100m 2N)
05736	00381	H	2	5/21/98 16:40:48	33.356	-106.626	5/21/98 16:40:03	5/19/98 10:42:13	33.3592	-106.6213	123	0	0 35 (51m-75m 2N)
05736	00381	H	2	5/21/98 16:40:48	33.356	-106.626	5/21/98 16:41:33	5/19/98 22:54:41	33.3585	-106.6330	153	0	0 27 (26m-50m 3N)
05736	00381	D	A	5/22/98 23:17:31	33.340	-106.618	5/22/98 23:15:16	5/20/98 23:22:41	33.3468	-106.6352	68	0	0 27 (26m-50m 3N)
05736	00381	D	A	5/22/98 23:17:31	33.340	-106.618	5/22/98 23:16:46	5/21/98 05:29:06	33.3492	-106.6385	93	0	0 37 (51m-75m 3N)
05736	00381	D	3	5/23/98 00:56:46	33.350	-106.647	5/23/98 00:53:46	5/21/98 11:35:31	33.3542	-106.6063	111	0	0 27 (26m-50m 3N)
05736	00381	H					5/23/98 02:13:16	5/21/98 17:45:42	33.3545	-106.6192	119	0	0 29 (26m-50m 4N)
05736	00381	D	B	5/24/98 00:39:10	33.072	-107.171	5/24/98 00:37:39	5/21/98 23:51:59	33.3565	-106.6207	61	0	0 27 (26m-50m 3N)
05736	00381	D	1	5/24/98 02:16:11	33.362	-106.638	5/24/98 02:19:11	5/22/98 12:05:00	33.3603	-106.6222	121	0	0 27 (26m-50m 3N)
05736	00381	H	3	5/24/98 03:39:25	33.356	-106.636	5/24/98 03:38:40	5/23/98 00:20:42	33.3595	-106.6195	94	0	0 27 (26m-50m 3N)
05736	00381	H	3	5/24/98 03:39:25	33.356	-106.636	5/24/98 03:38:40	5/23/98 06:27:42	33.3533	-106.6218	78	0	0 19 (0m-26m 4N)
05736	00381	H	3	5/24/98 03:39:25	33.356	-106.636	5/24/98 03:41:40	5/22/98 18:10:43	33.3587	-106.6158	99	0	0 29 (26m-50m 4N)
05736	00381	J	A	5/25/98 10:53:15	33.362	-106.629	5/25/98 10:51:45	5/23/98 12:34:38	33.3558	-106.6185	134	0	0 27 (26m-50m 3N)
05736	00381	D	1	5/25/98 12:34:30	33.356	-106.623	5/25/98 12:38:15	5/23/98 18:40:11	33.3543	-106.6197	109	0	0 27 (26m-50m 3N)
05736	00381	D	3	5/25/98 14:14:02	33.355	-106.632	5/25/98 14:16:17	5/24/98 00:46:00	33.3503	-106.6108	92	0	0 37 (51m-75m 3N)

05736	00381	D	3	5/25/98 14:14:02	33.355	-106.632	5/25/98 14:17:47	5/24/98 06:55:42	33.3575	-106.6265	70	0	0 29 (26m-50m 4N)
05736	00381	D	B	5/26/98 13:51:29	33.339	-106.653	5/26/98 13:48:29	5/24/98 13:04:00	33.3635	-106.6192	132	0	0 37 (51m-75m 3N)
05736	00381	H	2	5/26/98 15:39:00	33.349	-106.602	5/26/98 15:42:00	5/24/98 19:09:06	33.3405	-106.6208	78	0	0 29 (26m-50m 4N)
05736	00381	H	A	5/26/98 17:19:30	33.355	-106.610	5/26/98 17:19:30	5/25/98 07:21:43	33.3560	-106.6243	110	0	0 29 (26m-50m 4N)
05736	00381	H	A	5/26/98 17:19:30	33.355	-106.610	5/26/98 17:20:59	5/25/98 13:32:31	33.3580	-106.6165	150	0	0 27 (26m-50m 3N)
05736	00381	H	A	5/26/98 17:19:30	33.355	-106.610	5/26/98 17:20:59	5/25/98 19:38:59	33.3452	-106.6237	107	0	0 27 (26m-50m 3N)
05736	00381	J	B	5/26/98 20:26:00	33.387	-106.686	5/26/98 20:28:15	5/25/98 01:16:32	33.3497	-106.6273	161	0	0 29 (26m-50m 4N)
05736	00381	D	1	5/28/98 02:28:54	33.353	-106.628	5/28/98 02:30:24	5/26/98 01:45:22	33.3278	-106.6158	127	0	0 37 (51m-75m 3N)
05736	00381	H	3	5/28/98 04:30:48	33.352	-106.623	5/28/98 04:27:03	5/26/98 07:50:31	33.3583	-106.5920	79	0	0 47 (76m-100m 3N)
05736	00381	H	3	5/28/98 04:30:48	33.352	-106.623	5/28/98 04:28:33	5/26/98 13:56:37	33.3532	-106.6262	80	0	0 27 (26m-50m 3N)
05736	00381	H	3	5/28/98 04:30:48	33.352	-106.623	5/28/98 04:33:03	5/27/98 02:16:46	33.3608	-106.6512	245	0	0 27 (26m-50m 3N)
05736	00381	H	3	5/28/98 04:30:48	33.352	-106.623	5/28/98 04:33:03	5/27/98 08:19:43	33.3603	-106.6243	64	0	0 27 (26m-50m 3N)
05736	00381	H	3	5/28/98 04:30:48	33.352	-106.623	5/28/98 04:34:33	5/26/98 20:07:12	33.3500	-106.6188	110	0	0 29 (26m-50m 4N)
05736	00381	J	B	5/29/98 08:28:16	33.416	-106.644	5/29/98 08:31:16	5/27/98 14:25:42	33.3508	-106.6228	66	0	0 29 (26m-50m 4N)
05736	00381	J	1	5/29/98 10:09:47	33.335	-106.531	5/29/98 10:11:17	5/27/98 20:33:17	33.3490	-106.5940	157	0	0 35 (51m-75m 2N)
05736	00381	J	1	5/29/98 10:09:47	33.335	-106.531	5/29/98 10:15:47	5/28/98 08:49:42	33.3507	-106.6213	102	0	0 27 (26m-50m 3N)
05736	00381	J	1	5/30/98 11:39:15	33.357	-106.633	5/30/98 11:37:45	5/29/98 09:17:13	33.3515	-106.6090	62	0	0 37 (51m-75m 3N)
05736	00381	J	1	5/30/98 11:39:15	33.357	-106.633	5/30/98 11:37:45	5/29/98 15:25:02	33.3585	-106.6208	95	0	0 25 (26m-50m 2N)
05736	00381	J	1	5/30/98 11:39:15	33.357	-106.633	5/30/98 11:39:15	5/29/98 03:07:13	33.3660	-106.6157	65	0	0 27 (26m-50m 3N)
05736	00381	D					5/30/98 12:24:15	5/28/98 14:56:13	33.3543	-106.6228	132	0	0 39 (51m-75m 4N)
05736	00381	D					5/30/98 15:42:15	5/28/98 21:01:05	33.3518	-106.6193	66	0	0 29 (26m-50m 4N)
05736	00381	J	3	5/31/98 21:10:03	33.363	-106.622	5/31/98 21:08:33	5/30/98 15:53:19	33.3638	-106.6188	105	0	0 37 (51m-75m 3N)
05736	00381	J	2	5/31/98 22:51:30	33.360	-106.637	5/31/98 22:49:15	5/30/98 03:41:52	33.3685	-106.6122	385	0	0 27 (26m-50m 3N)
05736	00381	J	2	5/31/98 22:51:30	33.360	-106.637	5/31/98 22:50:45	5/30/98 09:46:42	33.3838	-106.6192	311	0	0 39 (51m-75m 4N)
05736	00381	J	2	5/31/98 22:51:30	33.360	-106.637	5/31/98 22:55:15	5/30/98 22:01:11	33.3627	-106.6280	143	0	0 27 (26m-50m 3N)
05736	00381	H	A	6/2/98 03:28:50	33.354	-106.632	6/2/98 03:23:35	5/31/98 16:19:00	33.3365	-106.6335	127	0	0 37 (51m-75m 3N)
05736	00381	H	A	6/2/98 03:28:50	33.354	-106.632	6/2/98 03:29:35	5/31/98 10:11:42	33.3570	-106.6097	53	0	0 37 (51m-75m 3N)
05736	00381	H	A	6/2/98 03:28:50	33.354	-106.632	6/2/98 03:31:05	5/31/98 04:06:42	33.3520	-106.6303	112	0	0 29 (26m-50m 4N)
05736	00381	H					6/2/98 05:08:14	6/1/98 04:35:42	33.3492	-106.6358	88	0	0 27 (26m-50m 3N)
05736	00381	J	3	6/3/98 10:55:20	33.361	-106.633	6/3/98 10:57:35	6/1/98 10:42:12	33.3487	-106.6348	118	0	0 27 (26m-50m 3N)
05736	00381	D	2	6/3/98 12:36:06	33.357	-106.619	6/3/98 12:31:36	6/1/98 16:48:06	33.3523	-106.6268	111	0	0 29 (26m-50m 4N)
05736	00381	D	2	6/3/98 12:36:06	33.357	-106.619	6/3/98 12:37:36	6/2/98 11:10:43	33.3513	-106.6225	67	0	0 29 (26m-50m 4N)
05736	00381	D	2	6/3/98 12:36:06	33.357	-106.619	6/3/98 12:39:06	6/2/98 05:03:42	33.3495	-106.6323	80	0	0 37 (51m-75m 3N)
05736	00381	D	2	6/3/98 12:36:06	33.357	-106.619	6/3/98 12:40:36	6/1/98 22:57:41	33.3562	-106.6327	324	0	0 27 (26m-50m 3N)
05736	00381	D					6/4/98 15:30:15	6/3/98 17:47:21	33.3593	-106.6177	147	0	0 37 (51m-75m 3N)
05736	00381	H	3	6/4/98 17:08:29	33.361	-106.643	6/4/98 17:07:44	6/2/98 23:23:11	33.3573	-106.6235	97	0	0 27 (26m-50m 3N)
05736	00381	H	3	6/4/98 17:08:29	33.361	-106.643	6/4/98 17:09:14	6/2/98 17:18:20	33.3690	-106.6392	164	0	0 45 (76m-100m 2N)
05736	00381	H	3	6/4/98 17:08:29	33.361	-106.643	6/4/98 17:12:14	6/3/98 05:42:32	33.3535	-106.6370	891	0	0 19 (0m-26m 4N)
05736	00381	J	2	6/5/98 21:54:34	33.359	-106.648	6/5/98 21:50:04	6/3/98 23:53:59	33.3672	-106.6208	188	0	0 37 (51m-75m 3N)
05736	00381	D	A	6/6/98 02:29:50	33.396	-106.636	6/6/98 02:26:50	6/4/98 12:04:42	33.3672	-106.6342	106	0	0 27 (26m-50m 3N)
05736	00381	H	3	6/6/98 02:39:35	33.365	-106.635	6/6/98 02:35:50	6/4/98 05:59:06	33.3623	-106.6360	135	0	0 27 (26m-50m 3N)
05736	00381	H	3	6/6/98 02:39:35	33.365	-106.635	6/6/98 02:41:50	6/5/98 00:25:06	33.3590	-106.6350	288	0	0 39 (51m-75m 4N)

05736	00381	H	3	6/6/98 02:39:35	33.365	-106.635	6/6/98 02:43:20	6/4/98 18:14:11	33.3470	-106.6323	71	0	0	37 (51m-75m 3N)
05736	00381	H	3	6/7/98 04:05:42	33.358	-106.635	6/7/98 04:03:27	6/5/98 06:28:06	33.3585	-106.6372	111	0	0	39 (51m-75m 4N)
05736	00381	H	3	6/7/98 04:05:42	33.358	-106.635	6/7/98 04:09:27	6/6/98 00:50:48	33.3622	-106.6478	143	0	0	27 (26m-50m 3N)
05736	00381	H	3	6/7/98 04:05:42	33.358	-106.635	6/7/98 04:09:27	6/6/98 06:58:42	33.3568	-106.6388	182	0	0	27 (26m-50m 3N)
05736	00381	J	B	6/7/98 08:29:12	33.386	-106.632	6/7/98 08:28:27	6/5/98 12:34:02	33.3350	-106.6342	105	0	0	37 (51m-75m 3N)
05736	00381	D	1	6/8/98 12:25:55	33.356	-106.623	6/8/98 12:25:55	6/6/98 13:03:06	33.3562	-106.6383	85	0	0	29 (26m-50m 4N)
05736	00381	D	0	6/8/98 14:06:01	33.352	-106.635	6/8/98 14:11:16	6/6/98 19:10:18	33.3558	-106.6368	157	0	0	27 (26m-50m 3N)
05736	00381	H	2	6/8/98 14:38:16	33.343	-106.606	6/8/98 14:36:46	6/7/98 13:34:48	33.3602	-106.6212	222	0	0	25 (26m-50m 2N)
05736	00381	H	2	6/8/98 14:38:16	33.343	-106.606	6/8/98 14:39:46	6/7/98 07:25:01	33.3487	-106.6262	70	0	0	27 (26m-50m 3N)
05736	00381	H	2	6/8/98 14:38:16	33.343	-106.606	6/8/98 14:41:15	6/7/98 01:15:12	33.3570	-106.6402	85	0	0	29 (26m-50m 4N)
05736	00381	H	0	6/9/98 17:46:30	33.348	-106.636	6/9/98 17:45:45	6/7/98 19:41:06	33.3555	-106.6257	240	0	0	27 (26m-50m 3N)
05736	00381	J	1	6/9/98 21:12:44	33.362	-106.599	6/9/98 21:08:14	6/8/98 01:45:22	33.3523	-106.6318	134	0	0	37 (51m-75m 3N)
05736	00381	J	1	6/9/98 21:12:44	33.362	-106.599	6/9/98 21:12:44	6/8/98 20:08:17	33.3537	-106.6177	109	0	0	27 (26m-50m 3N)
05736	00381	J	1	6/9/98 21:12:44	33.362	-106.599	6/9/98 21:15:44	6/8/98 14:00:43	33.3375	-106.6107	88	0	0	37 (51m-75m 3N)
05736	00381	D	2	6/11/98 02:19:39	33.355	-106.632	6/11/98 02:16:39	6/9/98 02:15:23	33.3580	-106.6175	171	0	0	37 (51m-75m 3N)
05736	00381	D	2	6/11/98 02:19:39	33.355	-106.632	6/11/98 02:22:39	6/9/98 20:36:41	33.3543	-106.6198	121	0	0	25 (26m-50m 2N)
05736	00381	H	A	6/11/98 04:58:28	33.352	-106.628	6/11/98 04:59:13	6/9/98 14:26:12	33.3282	-106.6202	99	0	0	37 (51m-75m 3N)
05736	00381	H	A	6/11/98 04:58:28	33.352	-106.628	6/11/98 05:00:43	6/9/98 08:20:36	33.3545	-106.6255	128	0	0	37 (51m-75m 3N)
05736	00381	J	3	6/12/98 09:15:49	33.360	-106.623	6/12/98 09:19:34	6/10/98 02:44:38	33.3563	-106.6220	160	0	0	39 (51m-75m 4N)
05736	00381	J	3	6/12/98 10:54:34	33.361	-106.638	6/12/98 10:51:34	6/10/98 15:01:49	33.3573	-106.6103	476	0	0	27 (26m-50m 3N)
05736	00381	J	3	6/12/98 10:54:34	33.361	-106.638	6/12/98 10:56:04	6/11/98 03:15:19	33.3545	-106.6282	314	0	0	27 (26m-50m 3N)
05736	00381	J	3	6/12/98 10:54:34	33.361	-106.638	6/12/98 10:57:34	6/10/98 21:01:11	33.3307	-106.6243	73	0	0	39 (51m-75m 4N)
05736	00381	J	3	6/12/98 10:54:34	33.361	-106.638	6/12/98 11:00:33	6/10/98 08:50:07	33.3605	-106.6278	133	0	0	35 (51m-75m 2N)
05736	00381	D	B	6/13/98 15:36:30	33.352	-106.607	6/13/98 15:35:45	6/11/98 15:26:22	33.3440	-106.6365	186	0	0	37 (51m-75m 3N)
05736	00381	D	B	6/13/98 15:36:30	33.352	-106.607	6/13/98 15:37:15	6/11/98 09:19:00	33.3535	-106.6245	103	0	0	39 (51m-75m 4N)
05736	00381	H	3	6/13/98 16:57:31	33.357	-106.620	6/13/98 16:52:16	6/12/98 03:43:31	33.3588	-106.6302	494	0	0	39 (51m-75m 4N)
05736	00381	J	3	6/14/98 21:56:18	33.354	-106.629	6/14/98 21:52:33	6/12/98 22:00:46	33.3567	-106.6410	131	0	0	25 (26m-50m 2N)
05736	00381	J	3	6/14/98 21:56:18	33.354	-106.629	6/14/98 22:00:03	6/13/98 10:11:42	33.3488	-106.6117	61	0	0	29 (26m-50m 4N)
05736	00381	J	3	6/14/98 21:56:18	33.354	-106.629	6/14/98 22:01:33	6/13/98 04:06:13	33.3410	-106.6228	97	0	0	29 (26m-50m 4N)
05736	00381	D	A	6/15/98 00:49:09	33.360	-106.618	6/15/98 00:50:39	6/13/98 16:22:13	33.3515	-106.6127	85	0	0	27 (26m-50m 3N)
05736	00381	H	3	6/16/98 03:54:29	33.356	-106.622	6/16/98 03:49:59	6/13/98 22:29:41	33.3557	-106.6238	101	0	0	27 (26m-50m 3N)
05736	00381	H	3	6/16/98 03:54:29	33.356	-106.622	6/16/98 03:54:29	6/14/98 16:48:00	33.3218	-106.6080	113	0	0	37 (51m-75m 3N)
05736	00381	H	3	6/16/98 03:54:29	33.356	-106.622	6/16/98 03:58:59	6/14/98 04:38:20	33.3480	-106.6263	257	0	0	37 (51m-75m 3N)
05736	00381	J	0	6/17/98 11:42:18	33.353	-106.630	6/17/98 11:44:33	6/14/98 22:58:05	33.3378	-106.6168	115	0	0	37 (51m-75m 3N)
05736	00381	D	2	6/17/98 12:27:20	33.351	-106.618	6/17/98 12:25:05	6/16/98 05:33:12	33.3552	-106.6137	98	0	0	19 (0m-26m 4N)
05736	00381	D	2	6/17/98 12:27:20	33.351	-106.618	6/17/98 12:26:35	6/15/98 17:17:13	33.3583	-106.6103	105	0	0	37 (51m-75m 3N)
05736	00381	D	2	6/17/98 12:27:20	33.351	-106.618	6/17/98 12:28:05	6/15/98 11:10:31	33.3575	-106.6265	63	0	0	29 (26m-50m 4N)
05736	00381	D	2	6/17/98 12:27:20	33.351	-106.618	6/17/98 12:29:35	6/15/98 05:04:44	33.3572	-106.6273	76	0	0	19 (0m-26m 4N)
05736	00381	H	2	6/18/98 15:53:33	33.350	-106.606	6/18/98 15:53:33	6/16/98 11:40:00	33.3637	-106.6097	70	0	0	27 (26m-50m 3N)
05736	00381	H	2	6/18/98 17:36:18	33.359	-106.631	6/18/98 17:32:33	6/17/98 12:08:32	33.3732	-106.6358	93	0	0	37 (51m-75m 3N)
05736	00381	H	2	6/18/98 17:36:18	33.359	-106.631	6/18/98 17:32:33	6/17/98 18:15:35	33.3522	-106.6422	83	0	0	37 (51m-75m 3N)
05736	00381	H	2	6/18/98 17:36:18	33.359	-106.631	6/18/98 17:35:33	6/17/98 05:58:00	33.3373	-106.6395	68	0	0	37 (51m-75m 3N)

05736	00381	H	2	6/18/98 17:36:18	33.359	-106.631	6/18/98 17:40:03	6/16/98 23:53:47	33.3663	-106.6533	180	0	0 37 (51m-75m 3N)
05736	00381	D	1	6/20/98 00:42:19	33.358	-106.571	6/20/98 00:40:04	6/18/98 00:22:12	33.3767	-106.6423	117	0	0 47 (76m-100m 3N)
05736	00381	D	1	6/20/98 02:21:35	33.342	-106.624	6/20/98 02:23:05	6/18/98 06:28:42	33.3550	-106.6383	149	0	0 29 (26m-50m 4N)
05736	00381	H	1	6/20/98 03:05:50	33.357	-106.567	6/20/98 03:08:05	6/18/98 18:44:29	33.3587	-106.6308	127	0	0 29 (26m-50m 4N)
05736	00381	H	1	6/21/98 04:33:36	33.354	-106.619	6/21/98 04:35:51	6/19/98 00:52:12	33.3633	-106.6247	151	0	0 47 (76m-100m 3N)
05736	00381	J	2	6/21/98 09:15:15	33.352	-106.607	6/21/98 09:12:15	6/20/98 01:20:02	33.3457	-106.6153	132	0	0 37 (51m-75m 3N)
05736	00381	J	2	6/21/98 09:15:15	33.352	-106.607	6/21/98 09:15:15	6/19/98 19:14:30	33.3410	-106.6298	407	0	0 37 (51m-75m 3N)
05736	00381	J	2	6/21/98 09:15:15	33.352	-106.607	6/21/98 09:16:45	6/19/98 13:05:06	33.3433	-106.6125	207	0	0 19 (0m-26m 4N)
05736	00381	J	2	6/21/98 09:15:15	33.352	-106.607	6/21/98 09:18:15	6/19/98 06:57:00	33.3425	-106.6210	81	0	0 37 (51m-75m 3N)
05736	00381	D	2	6/22/98 13:56:17	33.355	-106.627	6/22/98 13:56:17	6/20/98 13:34:06	33.3590	-106.6228	184	0	0 27 (26m-50m 3N)
05736	00381	H	B	6/22/98 15:02:33	33.343	-106.465	6/22/98 15:01:48	6/20/98 19:42:51	33.3798	-106.6020	350	0	0 45 (76m-100m 2N)
05736	00381	H	B	6/22/98 15:02:33	33.343	-106.465	6/22/98 15:01:48	6/22/98 14:30:06	33.3497	-106.5955	90	0	0 37 (51m-75m 3N)
05736	00381	H	B	6/22/98 15:02:33	33.343	-106.465	6/22/98 15:03:18	6/21/98 01:47:37	33.3525	-106.6168	268	0	0 49 (76m-100m 4N)
05736	00381	H	B	6/22/98 15:02:33	33.343	-106.465	6/22/98 15:03:18	6/22/98 08:20:14	33.3595	-106.6263	103	0	0 17 (0m-26m 3N)
05736	00381	D	A	6/22/98 15:36:18	33.359	-106.616	6/22/98 15:36:18	6/21/98 07:54:13	33.3540	-106.6042	62	0	0 37 (51m-75m 3N)
05736	00381	D	A	6/22/98 15:36:18	33.359	-106.616	6/22/98 15:36:18	6/22/98 02:14:37	33.3578	-106.6227	130	0	0 35 (51m-75m 2N)
05736	00381	D	A	6/22/98 15:36:18	33.359	-106.616	6/22/98 15:37:48	6/21/98 14:02:13	33.3537	-106.6200	107	0	0 29 (26m-50m 4N)
05736	00381	D	A	6/22/98 15:36:18	33.359	-106.616	6/22/98 15:37:48	6/21/98 20:08:06	33.3697	-106.6097	99	0	0 37 (51m-75m 3N)
05736	00381	H	2	6/23/98 16:33:33	33.357	-106.630	6/23/98 16:38:48	6/23/98 09:02:38	33.3570	-106.5852	356	0	0 37 (51m-75m 3N)
05736	00381	H	2	6/23/98 16:33:33	33.357	-106.630	6/23/98 16:38:48	6/23/98 15:13:14	33.3562	-106.6118	387	0	0 27 (26m-50m 3N)
05736	00381	H	1	6/24/98 16:21:47	33.359	-106.632	6/24/98 16:24:47	6/24/98 15:47:02	33.3618	-106.6288	127	0	0 37 (51m-75m 3N)
05736	00381	H	1	6/24/98 16:21:47	33.359	-106.632	6/24/98 16:26:17	6/24/98 09:39:13	33.3530	-106.6193	265	0	0 19 (0m-26m 4N)
05736	00381	H	A	6/25/98 17:50:34	33.343	-106.620	6/25/98 17:52:49	6/25/98 16:24:13	33.3380	-106.6102	68	0	0 35 (51m-75m 2N)
05736	00381	K	2	6/26/98 16:29:16	33.351	-106.623	6/26/98 16:32:16	6/26/98 10:59:14	33.3572	-106.6155	484	0	0 17 (0m-26m 3N)
05736	00381	K	3	6/29/98 01:22:28	33.356	-106.612	6/29/98 01:18:43	6/27/98 17:42:19	33.3507	-106.6192	177	0	0 27 (26m-50m 3N)
05736	00381	K	3	6/29/98 01:22:28	33.356	-106.612	6/29/98 01:20:13	6/27/98 11:35:14	33.3540	-106.6208	355	0	0 19 (0m-26m 4N)
05736	00381	K	3	6/29/98 01:22:28	33.356	-106.612	6/29/98 01:26:13	6/27/98 23:47:41	33.3550	-106.6248	64	0	0 27 (26m-50m 3N)
05736	00381	H	2	6/30/98 04:21:59	33.356	-106.621	6/30/98 04:18:14	6/29/98 00:17:11	33.3585	-106.6212	142	0	0 27 (26m-50m 3N)
05736	00381	H	2	6/30/98 04:21:59	33.356	-106.621	6/30/98 04:18:14	6/29/98 06:23:13	33.3573	-106.6302	71	0	0 29 (26m-50m 4N)
05736	00381	H	2	6/30/98 04:21:59	33.356	-106.621	6/30/98 04:22:44	6/28/98 05:54:13	33.3702	-106.6153	96	0	0 37 (51m-75m 3N)
05736	00381	H	2	6/30/98 04:21:59	33.356	-106.621	6/30/98 04:24:14	6/28/98 12:01:31	33.3682	-106.6102	175	0	0 29 (26m-50m 4N)
05736	00381	D	3	7/1/98 12:19:26	33.363	-106.625	7/1/98 12:23:11	6/29/98 18:35:42	33.3530	-106.6167	100	0	0 27 (26m-50m 3N)
05736	00381	D	3	7/1/98 12:19:26	33.363	-106.625	7/1/98 12:23:11	7/1/98 01:11:43	33.3692	-106.6430	134	0	0 47 (76m-100m 3N)
05736	00381	D	3	7/1/98 12:19:26	33.363	-106.625	7/1/98 12:24:41	6/30/98 19:11:42	33.3972	-106.6438	495	0	0 49 (76m-100m 4N)
05736	00381	J					7/1/98 12:27:41	6/30/98 06:51:43	33.3513	-106.6272	91	0	0 27 (26m-50m 3N)
05736	00381	J					7/1/98 12:27:41	6/30/98 12:59:19	33.3550	-106.6212	112	0	0 19 (0m-26m 4N)
05736	00381	H	B	7/1/98 14:54:49	33.255	-106.701	7/1/98 14:51:04	6/29/98 12:31:13	33.3725	-106.6428	190	0	0 45 (76m-100m 2N)
05736	00381	H	B	7/1/98 14:54:49	33.255	-106.701	7/1/98 14:51:04	7/1/98 07:17:01	33.3647	-106.6273	89	0	0 27 (26m-50m 3N)
05736	00381	H	1	7/3/98 16:09:04	33.372	-106.701	7/3/98 16:10:34	7/2/98 14:06:43	33.3505	-106.6442	102	0	0 37 (51m-75m 3N)
05736	00381	H	1	7/3/98 16:09:04	33.372	-106.701	7/3/98 16:12:04	7/2/98 07:59:01	33.3717	-106.6287	76	0	0 27 (26m-50m 3N)
05736	00381	H	1	7/3/98 16:09:04	33.372	-106.701	7/3/98 16:13:34	7/2/98 01:53:40	33.3562	-106.6263	359	0	0 37 (51m-75m 3N)
05736	00381	J	0	7/4/98 19:56:12	33.383	-106.631	7/4/98 19:54:42	7/2/98 20:12:12	33.3572	-106.6157	72	0	0 27 (26m-50m 3N)

05736	00381	J	1	7/4/98 21:34:42	33.351	-106.645	7/4/98 21:31:42	7/3/98 02:19:43	33.3540	-106.6133	163	0	0 27 (26m-50m 3N)
05736	00381	J	1	7/4/98 21:34:42	33.351	-106.645	7/4/98 21:33:12	7/3/98 08:24:13	33.3593	-106.5943	67	0	0 37 (51m-75m 3N)
05736	00381	J					7/5/98 21:27:04	7/3/98 20:41:42	33.3535	-106.6192	77	0	0 27 (26m-50m 3N)
05736	00381	H	1	7/6/98 03:07:20	33.359	-106.593	7/6/98 03:12:35	7/4/98 02:47:31	33.3510	-106.6082	64	0	0 35 (51m-75m 2N)
05736	00381	H	1	7/6/98 04:47:04	33.350	-106.628	7/6/98 04:44:04	7/5/98 03:17:13	33.3600	-106.6132	82	0	0 25 (26m-50m 2N)
05736	00381	H	1	7/6/98 04:47:04	33.350	-106.628	7/6/98 04:45:34	7/4/98 21:10:36	33.3543	-106.6062	122	0	0 27 (26m-50m 3N)
05736	00381	H	1	7/6/98 04:47:04	33.350	-106.628	7/6/98 04:48:34	7/4/98 08:53:37	33.3548	-106.6210	71	0	0 27 (26m-50m 3N)
05736	00381	J	3	7/7/98 09:39:28	33.357	-106.614	7/7/98 09:39:28	7/5/98 21:36:18	33.3597	-106.6300	145	0	0 27 (26m-50m 3N)
05736	00381	J	2	7/7/98 11:20:18	33.360	-106.629	7/7/98 11:19:33	7/6/98 09:52:12	33.3492	-106.6238	58	0	0 29 (26m-50m 4N)
05736	00381	D	B	7/7/98 11:46:33	33.370	-106.617	7/7/98 11:45:03	7/5/98 15:30:16	33.3545	-106.6133	145	0	0 25 (26m-50m 2N)
05736	00381	D	B	7/7/98 11:46:33	33.370	-106.617	7/7/98 11:48:03	7/6/98 03:45:32	33.3113	-106.6267	93	0	0 47 (76m-100m 3N)
05736	00381	K	2	7/8/98 15:24:09	33.352	-106.623	7/8/98 15:21:09	7/6/98 22:08:32	33.3743	-106.6098	318	0	0 57 (101m-200m 3N)
05736	00381	K	2	7/8/98 15:24:09	33.352	-106.623	7/8/98 15:25:39	7/7/98 10:21:00	33.3640	-106.6163	97	0	0 27 (26m-50m 3N)
05736	00381	K	2	7/8/98 15:24:09	33.352	-106.623	7/8/98 15:25:39	7/7/98 16:29:42	33.3535	-106.6352	183	0	0 37 (51m-75m 3N)
05736	00381	K	2	7/8/98 15:24:09	33.352	-106.623	7/8/98 15:27:09	7/7/98 04:10:37	33.3538	-106.5880	79	0	0 37 (51m-75m 3N)
05736	00381	H	B	7/8/98 16:42:54	33.558	-106.812	7/8/98 16:43:39	7/6/98 16:00:45	33.3378	-106.6155	212	0	0 47 (76m-100m 3N)
05736	00381	J	3	7/9/98 22:22:35	33.351	-106.602	7/9/98 22:26:20	7/7/98 22:34:11	33.3737	-106.5922	94	0	0 37 (51m-75m 3N)
05736	00381	D	3	7/10/98 00:01:31	33.354	-106.600	7/9/98 23:59:16	7/8/98 23:03:12	33.3497	-106.5867	67	0	0 37 (51m-75m 3N)
05736	00381	D	3	7/10/98 00:01:31	33.354	-106.600	7/10/98 00:02:16	7/8/98 10:46:37	33.3558	-106.6098	114	0	0 27 (26m-50m 3N)
05736	00381	D	3	7/10/98 00:01:31	33.354	-106.600	7/10/98 00:06:46	7/8/98 16:56:37	33.3333	-106.6037	109	0	0 37 (51m-75m 3N)
05736	00381	K	B	7/10/98 00:44:16	33.361	-106.639	7/10/98 00:45:46	7/8/98 04:39:43	33.3548	-106.6162	65	0	0 29 (26m-50m 4N)
05736	00381	K	3	7/11/98 02:01:16	33.362	-106.595	7/11/98 01:58:16	7/9/98 23:32:12	33.3527	-106.6142	118	0	0 23 (26m-50m 1N)
05736	00381	H	A	7/11/98 02:04:16	33.361	-106.597	7/11/98 02:02:46	7/9/98 11:15:36	33.3500	-106.6115	94	0	0 27 (26m-50m 3N)
05736	00381	H	1	7/11/98 03:42:30	33.352	-106.618	7/11/98 03:38:45	7/9/98 05:11:07	33.3475	-106.6058	183	0	0 29 (26m-50m 4N)
05736	00381	K	1	7/11/98 03:41:00	33.357	-106.614	7/11/98 03:43:15	7/10/98 05:38:43	33.3548	-106.6138	74	0	0 27 (26m-50m 3N)
05736	00381	H	1	7/11/98 03:42:30	33.352	-106.618	7/11/98 03:46:15	7/9/98 17:21:48	33.3530	-106.6093	101	0	0 35 (51m-75m 2N)
05736	00381	J					7/12/98 12:03:13	7/10/98 11:45:13	33.3358	-106.5948	103	0	0 37 (51m-75m 3N)
05736	00381	D	2	7/12/98 13:16:16	33.352	-106.609	7/12/98 13:19:16	7/10/98 23:58:12	33.3575	-106.6208	158	0	0 39 (51m-75m 4N)
05736	00381	K	3	7/12/98 13:58:16	33.354	-106.614	7/12/98 13:59:46	7/10/98 17:59:50	33.3567	-106.6050	621	0	0 27 (26m-50m 3N)
05736	00381	H	2	7/13/98 15:46:00	33.360	-106.623	7/13/98 15:46:45	7/11/98 18:24:17	33.3938	-106.6378	323	0	0 49 (76m-100m 4N)
05736	00381	H	2	7/13/98 17:26:30	33.365	-106.639	7/13/98 17:24:15	7/11/98 06:06:43	33.3435	-106.6082	65	0	0 37 (51m-75m 3N)
05736	00381	J	B	7/13/98 19:58:16	33.428	-106.774	7/13/98 19:56:46	7/12/98 00:29:22	33.3703	-106.6273	267	0	0 35 (51m-75m 2N)
05736	00381	J	B	7/13/98 19:58:16	33.428	-106.774	7/13/98 19:59:46	7/11/98 12:16:15	33.3603	-106.6192	202	0	0 25 (26m-50m 2N)
05736	00381	D	3	7/15/98 01:29:38	33.357	-106.625	7/15/98 01:34:08	7/12/98 06:37:20	33.3782	-106.6137	382	0	0 47 (76m-100m 3N)
05736	00381	H	1	7/15/98 02:53:57	33.362	-106.582	7/15/98 02:48:42	7/12/98 12:45:48	33.3747	-106.6038	289	0	0 47 (76m-100m 3N)
05736	00381	H	B	7/17/98 14:52:59	33.356	-106.643	7/17/98 14:52:14	7/12/98 18:52:44	33.3625	-106.6200	269	0	0 27 (26m-50m 3N)
05736	00381	K	B	7/17/98 15:27:51	33.340	-106.662	7/17/98 15:24:51	7/14/98 07:32:20	33.3527	-106.6200	162	0	0 27 (26m-50m 3N)
05736	00381	H	1	7/17/98 16:36:06	33.355	-106.626	7/17/98 16:32:21	7/13/98 19:17:42	33.3367	-106.6502	82	0	0 47 (76m-100m 3N)
05736	00381	H	1	7/17/98 16:36:06	33.355	-106.626	7/17/98 16:33:51	7/13/98 00:55:13	33.3597	-106.6228	58	0	0 27 (26m-50m 3N)
05736	00381	H	1	7/17/98 16:36:06	33.355	-106.626	7/17/98 16:41:21	7/14/98 01:25:50	33.3587	-106.6262	132	0	0 27 (26m-50m 3N)
05736	00381	J	1	7/18/98 22:23:26	33.352	-106.620	7/18/98 22:21:11	7/14/98 13:37:40	33.3685	-106.6272	123	0	0 37 (51m-75m 3N)
05736	00381	J	1	7/18/98 22:23:26	33.352	-106.620	7/18/98 22:22:41	7/15/98 01:56:07	33.3562	-106.6117	262	0	0 27 (26m-50m 3N)

05736	00381	H	2	7/20/98 03:32:30	33.354	-106.629	7/20/98 03:37:00	7/17/98 15:09:31	33.3625	-106.6187	429	0	0 37 (51m-75m 3N)
05736	00381	K	A	7/20/98 03:40:45	33.357	-106.608	7/20/98 03:38:30	7/15/98 14:11:56	33.3538	-106.6072	421	0	0 37 (51m-75m 3N)
05736	00381	K	A	7/20/98 03:40:45	33.357	-106.608	7/20/98 03:41:30	7/17/98 21:12:24	33.3378	-106.6263	172	0	0 27 (26m-50m 3N)
05736	00381	K	A	7/20/98 03:40:45	33.357	-106.608	7/20/98 03:43:00	7/18/98 03:18:19	33.3557	-106.6195	168	0	0 37 (51m-75m 3N)
05736	00381	J	A	7/21/98 08:43:22	33.357	-106.609	7/21/98 08:41:52	7/18/98 09:26:58	33.3567	-106.6137	326	0	0 27 (26m-50m 3N)
05736	00381	J	1	7/21/98 10:26:07	33.364	-106.644	7/21/98 10:28:22	7/18/98 15:29:37	33.3542	-106.6070	122	0	0 37 (51m-75m 3N)
05736	00381	J	1	7/21/98 10:26:07	33.364	-106.644	7/21/98 10:29:52	7/19/98 03:46:49	33.3448	-106.6217	114	0	0 37 (51m-75m 3N)
05736	00381	J	B	7/21/98 12:08:31	33.388	-106.622	7/21/98 12:10:46	7/19/98 09:55:27	33.3560	-106.6092	272	0	0 35 (51m-75m 2N)
05736	00381	H	2	7/22/98 17:13:07	33.356	-106.614	7/22/98 17:09:22	7/20/98 22:37:14	33.3708	-106.6192	301	0	0 37 (51m-75m 3N)
05736	00381	H	2	7/22/98 17:13:07	33.356	-106.614	7/22/98 17:13:52	7/20/98 16:31:09	33.3453	-106.6245	295	0	0 33 (51m-75m 1N)
05736	00381	J	0	7/23/98 23:09:54	33.347	-106.622	7/23/98 23:09:54	7/21/98 04:40:20	33.3600	-106.5953	121	0	0 37 (51m-75m 3N)
05736	00381	D	2	7/23/98 23:51:54	33.358	-106.612	7/24/98 00:36:43	7/22/98 05:11:02	33.3572	-106.6195	203	0	0 19 (0m-26m 4N)
05736	00381	D	1	7/24/98 01:31:28	33.352	-106.631	7/24/98 01:32:13	7/21/98 23:03:00	33.3613	-106.6290	80	0	0 25 (26m-50m 2N)
05736	00381	D	1	7/24/98 01:31:28	33.352	-106.631	7/24/98 01:36:43	7/21/98 10:49:43	33.3683	-106.6135	80	0	0 27 (26m-50m 3N)
05736	00381	K	2	7/25/98 03:30:36	33.353	-106.614	7/25/98 03:32:51	7/23/98 11:44:31	33.3550	-106.6105	99	0	0 27 (26m-50m 3N)
05736	00381	H					7/25/98 04:10:21	7/22/98 11:15:18	33.3647	-106.6243	95	0	0 25 (26m-50m 2N)
05736	00381	H					7/25/98 04:11:51	7/22/98 23:33:20	33.3725	-106.6160	146	0	0 37 (51m-75m 3N)
05736	00381	H					7/25/98 04:13:21	7/23/98 05:41:07	33.3522	-106.6173	254	0	0 27 (26m-50m 3N)
05736	00381	D	0	7/26/98 13:09:19	33.387	-106.622	7/26/98 13:06:22	7/24/98 06:10:07	33.3567	-106.6248	242	0	0 27 (26m-50m 3N)
05736	00381	H	1	7/26/98 14:44:31	33.363	-106.613	7/26/98 14:43:46	7/24/98 18:31:10	33.3562	-106.6098	788	32	0 33 (51m-75m 1N)
05736	00381	D	3	7/26/98 14:49:01	33.352	-106.621	7/26/98 14:45:16	7/24/98 12:13:43	33.3552	-106.6192	99	0	0 19 (0m-26m 4N)
05736	00381	D	3	7/26/98 14:49:01	33.352	-106.621	7/26/98 14:46:46	7/24/98 18:31:10	33.3562	-106.6045	788	0	0 33 (51m-75m 1N)
05736	00381	D	3	7/26/98 14:49:01	33.352	-106.621	7/26/98 14:48:16	7/25/98 00:29:45	33.3413	-106.6482	336	0	0 35 (51m-75m 2N)
05736	00381	D	3	7/26/98 14:49:01	33.352	-106.621	7/26/98 14:51:16	7/25/98 06:36:14	33.3560	-106.6157	124	0	0 19 (0m-26m 4N)
05736	00381	D	2	8/1/98 23:54:03	33.351	-106.610	8/1/98 23:52:33	7/26/98 00:55:08	33.3528	-106.6160	105	0	0 27 (26m-50m 3N)
05736	00381	D	2	8/1/98 23:54:03	33.351	-106.610	8/1/98 23:54:03	7/26/98 07:09:20	33.3297	-106.6035	591	0	0 35 (51m-75m 2N)
05736	00381	H	3	8/3/98 03:59:01	33.351	-106.623	8/3/98 03:56:01	7/27/98 07:31:47	33.3595	-106.6213	184	0	0 27 (26m-50m 3N)
05736	00381	H	3	8/3/98 03:59:01	33.351	-106.623	8/3/98 04:00:31	7/26/98 13:10:44	33.3625	-106.6245	75	0	0 27 (26m-50m 3N)
05736	00381	H	3	8/3/98 03:59:01	33.351	-106.623	8/3/98 04:02:01	7/26/98 19:19:48	33.3560	-106.6038	187	0	0 25 (26m-50m 2N)
05736	00381	H	3	8/3/98 03:59:01	33.351	-106.623	8/3/98 04:03:31	7/27/98 01:36:19	33.3473	-106.6037	816	0	0 37 (51m-75m 3N)
05736	00381	J	A	8/4/98 09:33:51	33.359	-106.610	8/4/98 09:30:51	7/27/98 13:36:13	33.3627	-106.6257	85	0	0 33 (51m-75m 1N)
05736	00381	J	A	8/4/98 09:33:51	33.359	-106.610	8/4/98 09:30:51	8/4/98 05:08:00	33.3653	-106.6278	81	0	0 27 (26m-50m 3N)
05736	00381	J	3	8/4/98 11:12:06	33.359	-106.615	8/4/98 11:12:51	8/2/98 10:22:19	33.3577	-106.6000	186	0	0 17 (0m-26m 3N)
05736	00381	J	3	8/4/98 11:12:06	33.359	-106.615	8/4/98 11:14:21	7/28/98 08:00:43	33.3322	-106.6348	158	0	0 37 (51m-75m 3N)
05736	00381	J	3	8/4/98 11:12:06	33.359	-106.615	8/4/98 11:14:21	8/3/98 23:06:47	33.3598	-106.6105	377	0	0 37 (51m-75m 3N)
05736	00381	D	B	8/4/98 13:09:02	33.374	-106.638	8/4/98 13:07:32	8/3/98 04:44:43	33.3520	-106.6223	202	0	0 27 (26m-50m 3N)
05736	00381	D	B	8/4/98 13:09:02	33.374	-106.638	8/4/98 13:07:32	8/3/98 10:50:12	33.3587	-106.6178	97	0	0 27 (26m-50m 3N)
05736	00381	H					8/11/98 16:31:32	8/5/98 11:54:12	33.3268	-106.6007	207	0	0 39 (51m-75m 4N)
05736	00381	K	1	8/19/98 13:23:32	33.357	-106.605	8/19/98 13:26:32	8/18/98 05:46:12	33.3463	-106.6298	80	0	0 27 (26m-50m 3N)
05736	00381	K	3	8/28/98 01:05:59	33.357	-106.631	8/28/98 01:08:14	8/25/98 09:19:37	33.3392	-106.6450	607	0	4 37 (51m-75m 3N)
05736	00381	H	3	8/28/98 03:49:29	33.346	-106.646	8/28/98 03:45:44	8/20/98 19:09:19	33.3443	-106.5940	240	0	0 45 (76m-100m 2N)
05736	00381	H	3	8/28/98 03:49:29	33.346	-106.646	8/28/98 03:47:14	8/20/98 07:04:13	33.3317	-106.6148	958	0	0 27 (26m-50m 3N)

05736	00381	H	3	8/28/98 03:49:29	33.346	-106.646	8/28/98 03:53:14	8/24/98 14:59:12	33.3568	-106.6253	468	0	0	29 (26m-50m 4N)
05736	00381	H	3	8/28/98 03:49:29	33.346	-106.646	8/28/98 03:54:44	8/21/98 07:19:51	33.3517	-106.6033	151	0	0	27 (26m-50m 3N)
05736	00381	J	1	8/29/98 09:53:25	33.353	-106.599	8/29/98 09:51:10	8/24/98 20:59:05	33.3362	-106.6243	98	0	0	47 (76m-100m 3N)
05736	00381	J	A	8/30/98 11:26:11	33.352	-106.620	8/30/98 11:25:26	8/25/98 03:05:12	33.3558	-106.6393	107	0	0	29 (26m-50m 4N)
05736	00381	D	1	8/30/98 13:37:48	33.365	-106.662	8/30/98 13:34:03	8/25/98 09:19:37	33.3392	-106.6443	607	0	0	37 (51m-75m 3N)
05736	00381	D	1	8/30/98 13:37:48	33.365	-106.662	8/30/98 13:34:03	8/30/98 11:38:21	33.3543	-106.6058	460	0	0	27 (26m-50m 3N)
05736	00381	K	2	8/30/98 16:01:48	33.359	-106.625	8/30/98 15:59:33	8/27/98 22:21:41	33.3567	-106.6328	106	0	0	27 (26m-50m 3N)
05736	00381	H	1	8/30/98 17:30:18	33.346	-106.625	8/30/98 17:29:33	8/28/98 10:52:13	33.3473	-106.6287	897	0	0	27 (26m-50m 3N)
05736	00381	H	1	8/30/98 17:30:18	33.346	-106.625	8/30/98 17:32:33	8/28/98 04:38:14	33.3430	-106.6393	489	0	0	27 (26m-50m 3N)
05736	00381	H	1	8/30/98 17:30:18	33.346	-106.625	8/30/98 17:32:33	8/29/98 04:57:07	33.3540	-106.6220	107	0	0	27 (26m-50m 3N)
05736	00381	H	1	8/30/98 17:30:18	33.346	-106.625	8/30/98 17:34:03	8/29/98 11:07:20	33.3517	-106.6113	114	0	0	27 (26m-50m 3N)
05736	00381	J					8/30/98 19:28:58	8/28/98 22:52:11	33.3470	-106.6160	178	0	0	27 (26m-50m 3N)
05736	00381	J	B	9/1/98 20:45:54	33.428	-106.613	9/1/98 20:46:39	9/1/98 12:47:45	33.3563	-106.6142	371	0	0	35 (51m-75m 2N)
05736	00381	J	2	9/3/98 20:24:39	33.353	-106.604	9/3/98 20:28:24	9/3/98 01:37:30	33.3462	-106.6115	347	0	0	23 (26m-50m 1N)
05736	00381	J	2	9/3/98 20:24:39	33.353	-106.604	9/3/98 20:28:24	9/3/98 07:40:25	33.3492	-106.6192	161	0	0	27 (26m-50m 3N)
05738	00381	D	B	6/6/98 13:12:06	33.147	-106.510	6/6/98 13:11:21	6/5/98 17:00:07	33.1408	-106.4913	108	0	0	19 (0m-26m 4N)
05738	00381	D	B	6/6/98 13:12:06	33.147	-106.510	6/6/98 13:12:51	6/5/98 23:12:18	33.1530	-106.4948	481	0	0	27 (26m-50m 3N)
05738	00381	D	3	6/7/98 14:27:49	33.139	-106.496	6/7/98 14:29:19	6/6/98 23:35:06	33.1490	-106.4958	92	0	0	27 (26m-50m 3N)
05738	00381	H	B	6/7/98 14:51:49	33.123	-106.514	6/7/98 14:50:19	6/6/98 23:52:10	33.1490	-106.4958	88	32	32	27 (26m-50m 3N)
05738	00381	H	3	6/7/98 16:32:19	33.139	-106.492	6/7/98 16:30:49	6/6/98 11:33:49	33.1507	-106.5247	802	0	0	47 (76m-100m 3N)
05738	00381	H	3	6/7/98 16:32:19	33.139	-106.492	6/7/98 16:32:19	6/6/98 05:12:06	33.1268	-106.4958	104	0	0	49 (76m-100m 4N)
05738	00381	H	3	6/7/98 16:32:19	33.139	-106.492	6/7/98 16:35:19	6/6/98 17:34:36	33.1415	-106.5038	420	0	0	27 (26m-50m 3N)
05738	00381	D	2	6/8/98 23:44:00	33.140	-106.513	6/8/98 23:44:45	6/7/98 11:47:01	33.1358	-106.5070	82	0	0	27 (26m-50m 3N)
05738	00381	D	2	6/9/98 01:22:46	33.146	-106.491	6/9/98 01:22:46	6/8/98 06:10:08	33.1463	-106.5005	69	0	0	27 (26m-50m 3N)
05738	00381	D	2	6/9/98 01:22:46	33.146	-106.491	6/9/98 01:22:46	6/8/98 12:16:53	33.1425	-106.5032	113	0	0	27 (26m-50m 3N)
05738	00381	H	2	6/9/98 02:01:46	33.139	-106.514	6/9/98 02:01:46	6/8/98 00:06:07	33.1083	-106.4992	186	0	0	47 (76m-100m 3N)
05738	00381	H	2	6/9/98 02:01:46	33.139	-106.514	6/9/98 02:03:16	6/7/98 17:57:13	33.1470	-106.4995	89	0	0	37 (51m-75m 3N)
05738	00381	H	2	6/10/98 03:27:22	33.147	-106.480	6/10/98 03:29:37	6/9/98 00:32:51	33.1453	-106.5005	101	0	0	27 (26m-50m 3N)
05738	00381	H	2	6/10/98 03:27:22	33.147	-106.480	6/10/98 03:31:07	6/9/98 06:39:31	33.1322	-106.5092	68	0	0	37 (51m-75m 3N)
05738	00381	H	2	6/10/98 03:27:22	33.147	-106.480	6/10/98 03:31:07	6/9/98 12:47:00	33.1437	-106.5045	158	0	0	19 (0m-26m 4N)
05738	00381	J	3	6/11/98 11:08:11	33.141	-106.497	6/11/98 11:11:11	6/9/98 18:51:29	33.1365	-106.5067	69	0	0	27 (26m-50m 3N)
05738	00381	D	2	6/11/98 14:41:16	33.142	-106.501	6/11/98 14:39:46	6/10/98 19:22:31	33.1427	-106.5010	176	0	0	29 (26m-50m 4N)
05738	00381	D	2	6/11/98 14:41:16	33.142	-106.501	6/11/98 14:39:46	6/11/98 01:26:43	33.1383	-106.4942	66	0	0	27 (26m-50m 3N)
05738	00381	D	2	6/11/98 14:41:16	33.142	-106.501	6/11/98 14:42:46	6/10/98 00:58:01	33.1428	-106.5047	93	0	0	27 (26m-50m 3N)
05738	00381	H					6/11/98 15:36:46	6/10/98 13:14:42	33.1425	-106.5042	66	0	0	29 (26m-50m 4N)
05738	00381	D	2	6/12/98 14:19:18	33.141	-106.498	6/12/98 14:23:48	6/11/98 07:33:39	33.1472	-106.4902	118	0	0	37 (51m-75m 3N)
05738	00381	J	3	6/12/98 20:37:33	33.141	-106.513	6/12/98 20:33:48	6/11/98 13:42:43	33.1328	-106.4957	57	0	0	37 (51m-75m 3N)
05738	00381	J	3	6/12/98 20:37:33	33.141	-106.513	6/12/98 20:38:18	6/12/98 01:58:12	33.1425	-106.5037	189	0	0	39 (51m-75m 4N)
05738	00381	J	3	6/12/98 20:37:33	33.141	-106.513	6/12/98 20:38:18	6/12/98 08:02:13	33.1420	-106.5055	71	0	0	19 (0m-26m 4N)
05738	00381	J	3	6/12/98 20:37:33	33.141	-106.513	6/12/98 20:39:48	6/11/98 19:51:41	33.1425	-106.5073	160	0	0	19 (0m-26m 4N)
05738	00381	J	3	6/12/98 20:37:33	33.141	-106.513	6/12/98 20:41:18	6/20/32 03:19:47	33.1328	-106.4957	121	0	0	37 (51m-75m 3N)
05738	00381	H	3	6/14/98 02:39:19	33.140	-106.516	6/14/98 02:37:04	6/12/98 14:08:30	33.1422	-106.5038	84	0	0	29 (26m-50m 4N)

05738	00381	H	3	6/14/98 02:39:19	33.140	-106.516	6/14/98 02:40:04	6/13/98 02:26:12	33.1420	-106.5037	103	0	0 47 (76m-100m 3N)
05738	00381	H	2	6/14/98 04:20:01	33.143	-106.498	6/14/98 04:20:46	6/13/98 14:37:38	33.1443	-106.5045	70	0	0 27 (26m-50m 3N)
05738	00381	H	2	6/14/98 04:20:01	33.143	-106.498	6/14/98 04:23:46	6/12/98 20:18:41	33.1473	-106.5017	91	0	0 29 (26m-50m 4N)
05738	00381	H	3	6/15/98 04:06:54	33.143	-106.498	6/15/98 04:12:09	6/13/98 20:44:29	33.1557	-106.5197	118	0	0 37 (51m-75m 3N)
05738	00381	J	1	6/15/98 10:21:24	33.134	-106.469	6/15/98 10:23:39	6/14/98 09:01:47	33.1443	-106.4933	112	0	0 27 (26m-50m 3N)
05738	00381	J	1	6/15/98 10:21:24	33.134	-106.469	6/15/98 10:23:39	6/15/98 03:19:13	33.1445	-106.4938	75	0	0 37 (51m-75m 3N)
05738	00381	J	1	6/15/98 10:21:24	33.134	-106.469	6/15/98 10:26:39	6/14/98 15:07:00	33.1425	-106.5037	68	0	0 19 (0m-26m 4N)
05738	00381	J	1	6/15/98 10:21:24	33.134	-106.469	6/15/98 10:26:39	6/14/98 21:13:41	33.1420	-106.5038	110	0	0 19 (0m-26m 4N)
05738	00381	J	1	6/15/98 10:21:24	33.134	-106.469	6/15/98 10:29:39	6/14/98 02:53:43	33.1427	-106.5045	64	0	0 27 (26m-50m 3N)
05738	00381	J	1	6/15/98 10:21:24	33.134	-106.469	6/15/98 10:29:39	6/15/98 09:29:14	33.1373	-106.5080	70	0	0 27 (26m-50m 3N)
05738	00381	J					6/16/98 11:54:03	6/16/98 10:07:31	33.1428	-106.5063	79	0	0 27 (26m-50m 3N)
05738	00381	D					6/17/98 12:25:47	6/17/98 04:42:44	33.1408	-106.4987	508	0	0 27 (26m-50m 3N)
05738	00381	D					6/17/98 12:25:47	6/17/98 10:45:14	33.1283	-106.5020	55	0	0 47 (76m-100m 3N)
05738	00381	D	1	6/19/98 13:24:01	33.149	-106.535	6/19/98 13:27:46	6/19/98 11:56:14	33.1435	-106.5000	54	0	0 27 (26m-50m 3N)
05738	00381	D	1	6/19/98 13:24:01	33.149	-106.535	6/19/98 13:29:16	6/19/98 05:53:43	33.1420	-106.5037	507	0	0 29 (26m-50m 4N)
05738	00381	D	B	6/20/98 13:06:00	33.235	-106.662	6/20/98 13:06:45	6/20/98 06:29:07	33.1415	-106.5038	342	0	0 29 (26m-50m 4N)
05738	00381	D	B	6/20/98 13:06:00	33.235	-106.662	6/20/98 13:06:45	6/20/98 12:35:13	33.1422	-106.5042	102	0	0 29 (26m-50m 4N)
05738	00381	H					6/21/98 15:15:02	6/21/98 07:16:08	33.1427	-106.5063	339	0	0 27 (26m-50m 3N)
05738	00381	H					6/21/98 15:15:02	6/21/98 13:22:30	33.1427	-106.5037	116	0	0 29 (26m-50m 4N)
05738	00381	H					6/22/98 15:07:16	6/22/98 08:03:02	33.1430	-106.4958	330	0	0 37 (51m-75m 3N)
05738	00381	H	2	6/23/98 16:34:01	33.142	-106.502	6/23/98 16:33:16	6/23/98 14:55:43	33.1425	-106.5045	60	0	0 29 (26m-50m 4N)
05738	00381	J	1	6/24/98 10:22:41	33.133	-106.469	6/24/98 10:27:11	6/24/98 03:27:13	33.1422	-106.5037	91	0	0 19 (0m-26m 4N)
05738	00381	D	B	6/26/98 12:32:55	33.159	-106.632	6/26/98 12:32:10	6/26/98 05:20:37	33.1420	-106.5037	497	0	0 19 (0m-26m 4N)
05738	00381	D	3	6/27/98 13:47:31	33.140	-106.490	6/27/98 13:51:16	6/27/98 06:13:38	33.1620	-106.5123	322	0	0 37 (51m-75m 3N)
05738	00381	D	3	6/27/98 13:47:31	33.140	-106.490	6/27/98 13:51:16	6/27/98 12:19:44	33.1422	-106.5040	82	0	0 19 (0m-26m 4N)
05738	00381	D	1	6/28/98 15:05:31	33.145	-106.504	6/28/98 15:07:46	6/28/98 07:18:14	33.1408	-106.4948	307	0	0 37 (51m-75m 3N)
05738	00381	K	A	6/29/98 15:26:41	33.139	-106.488	6/29/98 15:28:11	6/29/98 08:15:09	33.1347	-106.5077	363	0	0 37 (51m-75m 3N)
05738	00381	K	A	6/29/98 15:26:41	33.139	-106.488	6/29/98 15:28:11	6/29/98 14:20:32	33.1463	-106.5100	82	0	0 27 (26m-50m 3N)
05738	00381	H	3	6/30/98 16:48:31	33.140	-106.498	6/30/98 16:52:16	6/30/98 09:11:13	33.1422	-106.5035	371	0	0 29 (26m-50m 4N)
05738	00381	H	3	6/30/98 16:48:31	33.140	-106.498	6/30/98 16:52:16	6/30/98 15:16:13	33.1595	-106.5255	67	0	0 47 (76m-100m 3N)
05738	00381	H	0	7/1/98 16:33:28	33.132	-106.497	7/1/98 16:35:43	7/1/98 10:08:50	33.1373	-106.4963	471	0	0 47 (76m-100m 3N)
05738	00381	H	0	7/1/98 16:33:28	33.132	-106.497	7/1/98 16:35:43	7/1/98 16:13:12	33.1420	-106.5032	128	0	0 27 (26m-50m 3N)
05738	00381	J	2	7/2/98 10:36:45	33.139	-106.481	7/2/98 10:42:00	7/2/98 04:59:43	33.1418	-106.5033	528	0	0 19 (0m-26m 4N)
05738	00381	D	2	7/3/98 13:15:49	33.145	-106.524	7/3/98 13:18:04	7/3/98 05:44:01	33.1418	-106.5037	365	0	0 29 (26m-50m 4N)
05738	00381	D	2	7/3/98 13:15:49	33.145	-106.524	7/3/98 13:18:04	7/3/98 11:49:13	33.1417	-106.5038	72	0	0 19 (0m-26m 4N)
05738	00381	D	3	7/4/98 14:33:33	33.141	-106.498	7/4/98 14:45:07	7/4/98 06:39:14	33.1397	-106.4938	321	0	0 37 (51m-75m 3N)
05738	00381	D	3	7/4/98 14:33:33	33.141	-106.498	7/4/98 14:45:07	7/4/98 12:46:16	33.1648	-106.5052	139	0	0 47 (76m-100m 3N)
05738	00381	K	2	7/5/98 14:51:21	33.151	-106.544	7/5/98 14:55:06	7/5/98 07:17:38	33.1437	-106.4962	335	0	0 37 (51m-75m 3N)
05738	00381	K	2	7/5/98 14:51:21	33.151	-106.544	7/5/98 14:55:06	7/5/98 13:23:32	33.1435	-106.5057	84	0	0 27 (26m-50m 3N)
05738	00381	K					7/6/98 16:09:17	7/6/98 08:14:14	33.1422	-106.4940	373	0	0 37 (51m-75m 3N)
05738	00381	K					7/6/98 16:09:17	7/6/98 14:19:31	33.1355	-106.5020	86	0	0 27 (26m-50m 3N)
05738	00381	J	B	7/7/98 09:41:37	33.093	-106.576	7/7/98 09:38:37	7/7/98 09:00:45	33.1455	-106.5028	340	1	0 27 (26m-50m 3N)

05738	00381	H	B	7/7/98 16:58:22	33.144	-106.315	7/7/98 16:57:37	7/7/98 09:00:44	33.1455	-106.5028	340	0	0 27 (26m-50m 3N)
05738	00381	H	B	7/7/98 16:58:22	33.144	-106.315	7/7/98 16:59:07	7/7/98 15:06:14	33.1365	-106.4998	63	0	0 27 (26m-50m 3N)
05738	00381	J	3	7/8/98 11:09:26	33.139	-106.496	7/8/98 11:10:11	7/8/98 09:38:39	33.1453	-106.5012	75	0	0 37 (51m-75m 3N)
05738	00381	J	3	7/8/98 11:09:26	33.139	-106.496	7/8/98 11:14:41	7/8/98 03:28:43	33.1438	-106.5067	89	0	0 17 (0m-26m 3N)
05738	00381	J	A	7/9/98 10:59:19	33.139	-106.494	7/9/98 11:03:04	7/9/98 04:26:44	33.1420	-106.5043	209	0	0 19 (0m-26m 4N)
05738	00381	J	A	7/9/98 10:59:19	33.139	-106.494	7/9/98 11:03:04	7/9/98 10:34:31	33.1418	-106.5042	69	0	0 29 (26m-50m 4N)
05738	00381	J	2	7/10/98 10:48:15	33.140	-106.493	7/10/98 10:50:30	7/10/98 05:08:08	33.1445	-106.4905	401	0	0 27 (26m-50m 3N)
05738	00381	D	A	7/10/98 12:18:47	33.138	-106.502	7/10/98 12:20:17	7/10/98 11:12:45	33.1418	-106.5035	74	0	0 27 (26m-50m 3N)
05738	00381	D	A	7/11/98 13:38:46	33.137	-106.487	7/11/98 13:41:46	7/11/98 05:55:43	33.1425	-106.5040	433	0	0 29 (26m-50m 4N)
05738	00381	D	A	7/11/98 13:38:46	33.137	-106.487	7/11/98 13:41:46	7/11/98 11:59:43	33.1072	-106.4888	69	0	0 49 (76m-100m 4N)
05738	00381	K	2	7/12/98 13:58:01	33.144	-106.511	7/12/98 14:01:46	7/12/98 06:52:44	33.1392	-106.5033	498	0	0 19 (0m-26m 4N)
05738	00381	K	2	7/12/98 13:58:01	33.144	-106.511	7/12/98 14:01:46	7/12/98 12:55:42	33.1423	-106.5028	74	0	0 19 (0m-26m 4N)
05738	00381	H	3	7/13/98 15:45:33	33.144	-106.520	7/13/98 15:50:03	7/13/98 07:56:15	33.1423	-106.5045	420	0	0 29 (26m-50m 4N)
05738	00381	H	3	7/13/98 15:45:33	33.144	-106.520	7/13/98 15:50:03	7/13/98 14:00:31	33.1428	-106.5042	71	0	0 29 (26m-50m 4N)
05738	00381	H	2	7/14/98 15:31:46	33.144	-106.508	7/14/98 15:34:46	7/14/98 08:51:49	33.1432	-106.5010	398	0	0 37 (51m-75m 3N)
05738	00381	K					7/14/98 16:31:46	7/14/98 14:57:13	33.1420	-106.5038	116	0	0 39 (51m-75m 4N)
05738	00381	H	B	7/15/98 17:00:49	33.242	-106.456	7/15/98 17:01:34	7/15/98 09:55:44	33.1422	-106.4995	343	0	0 27 (26m-50m 3N)
05738	00381	H	B	7/15/98 17:00:49	33.242	-106.456	7/15/98 17:01:34	7/15/98 16:01:14	33.1602	-106.5262	68	0	0 39 (51m-75m 4N)
05738	00381	J	A	7/16/98 11:23:31	33.142	-106.497	7/16/98 11:25:46	7/16/98 04:37:50	33.1393	-106.5032	404	0	0 27 (26m-50m 3N)
05738	00381	J	A	7/16/98 11:23:31	33.142	-106.497	7/16/98 11:25:46	7/16/98 10:42:13	33.1422	-106.5028	64	0	0 29 (26m-50m 4N)
05738	00381	D	B	7/17/98 13:04:27	33.143	-106.606	7/17/98 13:05:12	7/17/98 05:42:19	33.1400	-106.4948	384	0	0 37 (51m-75m 3N)
05738	00381	D	B	7/17/98 13:04:27	33.143	-106.606	7/17/98 13:05:12	7/17/98 11:53:09	33.1642	-106.5053	431	0	0 47 (76m-100m 3N)
05738	00381	D	A	7/18/98 14:22:37	33.145	-106.499	7/18/98 14:23:21	7/18/98 06:38:54	33.1437	-106.4942	426	0	0 37 (51m-75m 3N)
05738	00381	D	A	7/18/98 14:22:37	33.145	-106.499	7/18/98 14:23:21	7/18/98 12:44:19	33.1457	-106.5003	148	0	0 37 (51m-75m 3N)
05738	00381	K	1	7/19/98 14:44:08	33.144	-106.514	7/19/98 14:47:53	7/19/98 07:24:44	33.1472	-106.4888	354	0	0 27 (26m-50m 3N)
05738	00381	K	1	7/19/98 14:44:08	33.144	-106.514	7/19/98 14:47:53	7/19/98 13:31:08	33.1338	-106.5150	133	0	0 37 (51m-75m 3N)
05738	00381	H	3	7/20/98 15:57:59	33.149	-106.539	7/20/98 16:01:44	7/20/98 14:35:44	33.1427	-106.4957	118	0	0 27 (26m-50m 3N)
05738	00381	H	A	7/21/98 15:45:20	33.144	-106.524	7/21/98 15:47:35	7/21/98 09:26:11	33.1440	-106.5005	394	0	0 29 (26m-50m 4N)
05738	00381	H	A	7/21/98 15:45:20	33.144	-106.524	7/21/98 15:47:35	7/21/98 15:31:02	33.1585	-106.5243	81	0	0 47 (76m-100m 3N)
05738	00381	J	0	7/22/98 10:15:17	33.193	-106.789	7/22/98 10:19:01	7/22/98 04:08:38	33.1367	-106.5057	478	0	0 27 (26m-50m 3N)
05738	00381	J	2	7/23/98 10:03:02	33.145	-106.531	7/23/98 10:09:02	7/23/98 05:13:10	33.1410	-106.5108	462	0	0 37 (51m-75m 3N)
05738	00381	H					7/24/98 04:21:44	7/23/98 23:39:40	33.1425	-106.5038	125	0	0 37 (51m-75m 3N)
05738	00381	H					7/25/98 16:36:20	7/25/98 13:04:44	33.1408	-106.5042	294	0	0 17 (0m-26m 3N)
05738	00381	J					7/27/98 09:17:20	7/27/98 02:14:19	33.1428	-106.5005	320	0	0 27 (26m-50m 3N)
05738	00381	J	3	7/27/98 22:24:45	33.143	-106.497	7/27/98 22:27:45	7/27/98 14:41:43	33.1418	-106.5023	393	0	0 37 (51m-75m 3N)
05738	00381	J	3	7/27/98 22:24:45	33.143	-106.497	7/27/98 22:27:45	7/27/98 20:47:02	33.1520	-106.4967	107	0	0 45 (76m-100m 2N)
05738	00381	J	2	7/28/98 10:48:08	33.138	-106.492	7/28/98 10:51:53	7/28/98 09:09:51	33.1475	-106.5038	147	0	0 27 (26m-50m 3N)
05738	00381	J	1	7/30/98 10:26:39	33.133	-106.467	7/30/98 10:31:09	7/30/98 04:33:43	33.1423	-106.5038	458	0	0 19 (0m-26m 4N)
05738	00381	J	1	7/31/98 10:16:03	33.173	-106.651	7/31/98 10:21:18	7/31/98 05:12:14	33.1445	-106.5102	481	0	0 37 (51m-75m 3N)
05738	00381	D	3	8/1/98 14:15:38	33.143	-106.499	8/1/98 14:17:53	8/1/98 06:22:43	33.1420	-106.5052	298	0	0 29 (26m-50m 4N)
05738	00381	H					8/2/98 14:56:56	8/2/98 13:31:23	33.1260	-106.4862	456	0	0 47 (76m-100m 3N)
05738	00381	J	B	8/3/98 09:40:30	33.159	-106.237	8/3/98 09:41:15	8/3/98 01:47:13	33.1418	-106.5038	85	0	0 19 (0m-26m 4N)

05738	00381	J	B	8/3/98	09:40:30	33.159	-106.237	8/3/98	09:41:15	8/3/98	07:57:42	33.1465	-106.5022	106	0	0 29 (26m-50m 4N)
05738	00381	J	2	8/4/98	22:34:25	33.150	-106.488	8/4/98	22:36:40	8/4/98	21:30:35	33.1382	-106.4967	248	0	0 37 (51m-75m 3N)
05738	00381	J	B	8/5/98	22:25:55	33.104	-106.489	8/5/98	22:24:25	8/5/98	22:24:11	33.1420	-106.5037	108	0	0 29 (26m-50m 4N)
05738	00381	D	A	8/6/98	23:44:34	33.137	-106.509	8/6/98	23:47:34	8/6/98	17:16:43	33.1410	-106.5040	510	0	0 29 (26m-50m 4N)
05738	00381	D	2	8/7/98	13:43:20	33.140	-106.489	8/7/98	13:46:20	8/7/98	11:57:50	33.1512	-106.5083	271	0	0 37 (51m-75m 3N)
05738	00381	J	0	8/10/98	21:29:33	33.108	-106.663	8/10/98	21:33:18	8/10/98	20:54:11	33.1418	-106.5037	240	0	0 19 (0m-26m 4N)
05738	00381	D	B	8/11/98	23:36:40	33.111	-106.597	8/11/98	23:37:25	8/11/98	16:30:48	33.1467	-106.4973	846	0	0 27 (26m-50m 3N)
05738	00381	D	B	8/11/98	23:36:40	33.111	-106.597	8/11/98	23:37:25	8/11/98	22:28:21	33.1540	-106.5125	101	0	0 35 (51m-75m 2N)
05738	00381	J	2	8/12/98	11:23:41	33.139	-106.497	8/12/98	11:26:41	8/12/98	10:50:38	33.1425	-106.4960	110	0	0 25 (26m-50m 2N)
05738	00381	K	3	8/13/98	01:35:29	33.139	-106.515	8/13/98	01:36:59	8/12/98	17:56:10	33.1375	-106.4913	409	0	0 35 (51m-75m 2N)
05738	00381	K	3	8/13/98	01:35:29	33.139	-106.515	8/13/98	01:38:29	8/13/98	00:02:13	33.1417	-106.5143	168	0	0 29 (26m-50m 4N)
05738	00381	K	B	8/14/98	02:48:47	32.903	-106.999	8/14/98	02:49:32	8/13/98	18:58:42	33.1385	-106.5020	808	0	0 49 (76m-100m 4N)
05738	00381	K	B	8/14/98	02:48:47	32.903	-106.999	8/14/98	02:49:32	8/14/98	00:57:00	33.1420	-106.5038	106	0	0 29 (26m-50m 4N)
05738	00381	K	3	8/14/98	15:10:46	33.136	-106.484	8/14/98	15:13:46	8/14/98	07:16:13	33.1418	-106.5037	292	0	0 19 (0m-26m 4N)
05738	00381	K	3	8/14/98	15:10:46	33.136	-106.484	8/14/98	15:13:46	8/14/98	13:22:43	33.1418	-106.4837	77	0	0 37 (51m-75m 3N)
05738	00381	D	B	8/15/98	00:06:26	33.016	-106.650	8/15/98	00:07:11	8/14/98	19:50:36	33.1485	-106.5192	252	0	0 37 (51m-75m 3N)
05738	00381	J	A	8/15/98	10:53:32	33.142	-106.495	8/15/98	10:55:47	8/15/98	03:33:45	33.1432	-106.5058	502	0	0 19 (0m-26m 4N)
05738	00381	J	A	8/15/98	10:53:32	33.142	-106.495	8/15/98	10:55:47	8/15/98	09:37:37	33.1505	-106.5087	131	0	0 35 (51m-75m 2N)
05738	00381	K	A	8/16/98	14:27:18	33.150	-106.527	8/16/98	14:27:18	8/16/98	12:37:31	33.1417	-106.5042	100	0	0 39 (51m-75m 4N)
05738	00381	H	B	8/17/98	04:24:21	33.253	-106.654	8/17/98	04:25:06	8/17/98	01:26:14	33.1478	-106.4997	98	0	0 37 (51m-75m 3N)
05738	00381	J						8/20/98	09:57:39	8/20/98	05:10:44	33.1435	-106.4802	400	0	0 37 (51m-75m 3N)

ID	DATE	TIME	LC	LATITUDE	LONGITUDE	LAT2	LON2	ALTITUDE	TEMP	VOLT	SEAS	ACT
5707	5/15/98	09:21:55	B	33.140	-106.409	28.215	-83.521	2000	B7	37	EF	C8
5707	5/15/98	11:03:55	2	33.181	-106.480	38.474	-131.327	2000	B7	37	EF	C8
5707	5/15/98	12:56:20	0	33.108	-106.978	29.027	-86.931	2000	B7	37	EF	C8
5707	5/15/98	14:34:26	3	33.201	-106.504	38.952	-134.991	2000	B7	37	EF	C8
5707	5/15/98	14:35:56	B	33.207	-106.510	24.761	-67.093	2000	B7	37	EF	C8
5707	5/16/98	14:13:42	1	33.196	-106.414	36.773	-124.620	2000	1A	37	EF	C7
5707	5/16/98	17:43:42	B	33.250	-106.412	43.595	-157.089	2000	B7	37	EF	C8
5707	5/16/98	20:30:30	B	33.214	-106.793	37.887	-83.423	2000	A2	37	C9	A7
5707	5/17/98	22:03:38	3	33.234	-106.475	28.994	-126.189	2000	7E	29	EF	C7
5707	5/17/98	23:28:23	1	33.223	-106.490	40.949	-67.772	2000	A2	37	EF	C7
5707	5/18/98	01:05:53	A	33.230	-106.469	31.394	-115.601	2000	AC	29	EF	C7
5707	5/18/98	01:35:08	A	33.212	-106.484	43.169	-60.244	2000	9E	27	EF	C7
5707	5/18/98	03:14:11	0	33.261	-106.325	32.814	-108.379	2000	9E	27	EF	C7
5707	5/19/98	08:38:04	1	33.416	-106.358	23.676	-62.188	2000	56	39	EF	C8
5707	5/19/98	10:16:18	0	33.437	-106.352	34.134	-108.697	2000	16	35	EF	C9
5707	5/20/98	10:07:22	0	33.476	-106.525	33.086	-104.710	2000	21	35	EF	CA
5707	5/20/98	11:48:37	1	33.444	-106.349	43.080	-152.982	2000	56	27	EF	CA
5707	5/20/98	12:44:52	3	33.447	-106.365	28.605	-82.614	2000	16	35	EF	C9
5707	5/20/98	14:23:07	A	33.448	-106.360	38.426	-130.572	2000	F6	37	EF	CB
5707	5/20/98	16:54:33	3	33.452	-106.362	39.111	-132.829	2000	21	27	EF	CA
5707	5/21/98	16:46:47	0	33.451	-106.397	37.728	-127.070	2000	59	24	92	49
5707	5/21/98	19:41:32	A	33.461	-106.365	43.875	-56.747	2000	56	27	EF	CA
5707	5/21/98	21:21:17	0	33.448	-106.444	33.685	-105.287	2000	21	35	EF	CA
5707	5/21/98	22:59:34	B	33.446	-106.349	23.567	-152.937	2000	56	27	EF	CA
5707	5/21/98	23:40:04	A	33.459	-106.372	39.901	-73.837	2000	57	27	EF	CA
5707	5/22/98	23:19:02	B	33.466	-106.504	41.909	-63.172	2000	82	23	EF	CB
5707	5/23/98	00:58:02	2	33.469	-106.349	32.478	-111.203	2000	21	35	EF	CA
5707	5/23/98	02:14:32	1	33.459	-106.377	39.546	-78.191	2000	21	35	EF	CA
5707	5/23/98	03:51:17	3	33.497	-106.361	29.272	-126.297	2000	82	23	EF	CB
5707	5/24/98	09:24:34	3	33.515	-106.359	28.590	-83.525	2000	1A	27	EF	CA
5707	5/24/98	12:56:22	1	33.512	-106.349	29.819	-88.443	2000	1A	27	EF	CA
5707	5/25/98	12:32:03	2	33.510	-106.358	27.484	-78.111	2000	7C	27	EF	CB
5707	5/25/98	14:14:03	B	33.508	-106.348	37.362	-125.809	2000	BF	29	EF	CB
5707	5/25/98	15:53:48	0	33.505	-106.347	32.768	-102.866	2000	37	37	EF	CB
5707	5/25/98	17:32:48	2	33.512	-106.349	42.835	-150.872	2000	C0	37	EF	CA
5707	5/26/98	20:25:51	3	33.513	-106.357	39.443	-78.557	2000	7C	27	EF	CB
5707	5/26/98	22:04:06	A	33.514	-106.345	29.028	-126.645	2000	88	27	EF	CB
5707	5/26/98	23:30:21	2	33.513	-106.361	40.961	-69.310	2000	88	27	EF	CB
5707	5/27/98	01:10:38	A	33.520	-106.324	31.276	-117.364	2000	11	19	EF	CB
5707	5/27/98	01:24:53	B	33.503	-106.379	44.165	-54.577	2000	A8	27	EF	C9
5707	5/28/98	02:49:54	1	33.506	-106.380	35.647	-96.458	2000	11	19	EF	CB
5707	5/28/98	04:31:09	2	33.514	-106.356	25.205	-144.298	2000	88	27	EF	CB
5707	5/28/98	08:40:16	1	33.543	-106.372	24.015	-62.249	2000	8D	19	EF	CB
5707	5/29/98	08:27:59	2	33.513	-106.359	22.634	-57.008	2000	A5	27	EF	CB
5707	5/29/98	10:09:14	0	33.525	-106.428	33.200	-104.911	2000	3D	37	EF	CB
5707	5/29/98	14:27:13	B	33.643	-106.424	38.635	-131.516	2000	0	27	EF	CB
5707	5/29/98	15:03:13	3	33.508	-106.371	27.545	-78.880	2000	3D	37	EF	CB
5707	5/30/98	14:50:11	A	33.503	-106.362	26.173	-72.727	2000	2E	37	EF	CB
5707	5/30/98	14:50:11	A	33.503	-106.362	26.173	-72.727	2000	2E	37	EF	CB
5707	5/30/98	16:32:11	3	33.501	-106.351	36.528	-120.756	2000	A5	27	EF	CB
5707	5/30/98	16:32:11	3	33.501	-106.351	36.528	-120.756	2000	A5	27	EF	CB
5707	5/30/98	19:41:11	2	33.507	-106.364	43.669	-57.099	2000	73	27	EF	CA
5707	5/30/98	19:41:11	2	33.507	-106.364	43.669	-57.099	2000	73	27	EF	CA
5707	5/30/98	21:19:10	A	33.465	-106.518	33.762	-105.073	2000	FD	29	EF	CA
5707	5/30/98	21:19:10	A	33.465	-106.518	33.762	-105.073	2000	FD	29	EF	CA
5707	5/31/98	21:07:29	B	33.489	-106.493	34.829	-99.893	2000	A1	37	EF	CA
5707	5/31/98	23:19:50	2	33.505	-106.361	41.738	-64.539	2000	5D	17	EF	CA
5707	6/1/98	00:58:49	2	33.506	-106.342	32.329	-112.846	2000	B7	57	EF	CA

5707	6/1/98	02:01:49	A	33.498	-106.369	40.811	-72.292	2000	1	35	EF	CA
5707	6/1/98	03:42:19	2	33.505	-106.352	30.495	-120.076	2000	20	37	EF	CA
5707	6/2/98	09:24:52	3	33.503	-106.380	28.579	-83.715	2000	34	27	EF	CB
5707	6/2/98	11:06:55	3	33.499	-106.359	38.764	-131.603	2000	1	35	EF	CA
5707	6/3/98	10:52:58	2	33.497	-106.359	37.855	-126.444	2000	F5	37	EF	CA
5707	6/3/98	14:16:58	A	33.508	-106.354	37.465	-126.841	2000	41	25	EF	CA
5707	6/3/98	15:42:28	3	33.513	-106.367	31.432	-96.734	2000	F5	37	EF	CA
5707	6/3/98	17:24:35	B	33.527	-106.371	41.429	-144.653	2000	4B	33	EF	CA
5707	6/4/98	17:06:54	2	33.506	-106.350	40.533	-138.880	2000	40	29	EF	CB
5707	6/4/98	20:27:09	3	33.511	-106.357	39.429	-78.662	2000	4B	33	EF	CA
5707	6/4/98	22:06:54	A	33.515	-106.345	29.154	-126.513	2000	C4	37	EF	CA
5707	6/4/98	23:32:40	3	33.509	-106.358	40.843	-70.488	2000	ED	27	EF	CA
5707	6/6/98	00:48:37	A	33.536	-106.221	33.148	-108.034	2000	59	29	EF	CB
5707	6/6/98	02:38:07	A	33.519	-106.367	36.897	-90.166	2000	96	47	AE	CA
5707	6/6/98	04:20:06	3	33.517	-106.337	26.497	-138.244	2000	59	29	EF	CB
5707	6/7/98	08:29:07	2	33.505	-106.364	22.654	-57.163	2000	47	27	EF	CB
5707	6/7/98	08:29:07	2	33.505	-106.364	22.654	-57.163	2000	47	27	EF	CB
5707	6/7/98	10:11:07	1	33.529	-106.430	33.221	-104.987	2000	B8	37	EF	CB
5707	6/7/98	10:11:07	1	33.529	-106.430	33.221	-104.987	2000	B8	37	EF	CB
5707	6/7/98	11:50:52	2	33.516	-106.350	43.198	-153.076	2000	B3	25	EF	CB
5707	6/7/98	11:50:52	2	33.516	-106.350	43.198	-153.076	2000	B3	25	EF	CB
5707	6/7/98	12:50:23	A	33.513	-106.348	29.248	-85.119	2000	BA	27	EF	CB
5707	6/7/98	12:50:23	A	33.513	-106.348	29.248	-85.119	2000	BA	27	EF	CB
5707	6/8/98	14:04:32	3	33.511	-106.344	36.789	-122.328	2000	B8	37	EF	CB
5707	6/8/98	16:19:32	A	33.509	-106.346	35.422	-114.258	2000	BA	27	EF	CB
5707	6/8/98	17:59:17	B	33.578	-106.310	44.980	-162.927	2000	B8	37	EF	CB
5707	6/8/98	19:43:34	B	33.476	-106.284	43.444	-57.403	2000	B3	25	EF	CB
5707	6/9/98	21:11:24	2	33.513	-106.379	34.873	-99.989	2000	D5	27	EF	CB
5707	6/9/98	22:49:39	B	33.515	-106.354	24.685	-147.901	2000	BA	27	EF	CB
5707	6/9/98	23:21:54	B	33.504	-106.370	41.458	-65.561	2000	96	47	EF	CA
5707	6/10/98	01:03:09	1	33.515	-106.368	32.042	-113.474	2000	B3	25	EF	CB
5707	6/10/98	01:49:42	1	33.508	-106.371	42.032	-66.149	2000	96	47	EF	CA
5707	6/11/98	03:18:54	0	33.509	-106.289	33.121	-108.068	2000	D5	27	EF	CB
5707	6/11/98	04:57:09	1	33.496	-106.363	22.676	-155.957	2000	AE	27	EF	CB
5707	6/11/98	09:26:40	3	33.489	-106.375	28.602	-83.722	2000	D5	27	EF	CB
5707	6/12/98	09:14:21	A	33.504	-106.362	27.430	-78.646	2000	BA	26	ED	CB
5707	6/12/98	10:57:51	2	33.494	-106.349	37.683	-126.442	2000	AE	27	EF	CB
5707	6/12/98	12:36:51	0	33.512	-106.349	28.010	-80.319	2000	AE	27	EF	CB
5707	6/12/98	14:18:06	3	33.505	-106.363	37.899	-127.823	2000	2C	37	EF	CA
5707	6/12/98	15:31:30	3	33.506	-106.365	30.154	-90.708	2000	F2	37	EF	CA
5707	6/13/98	15:17:51	2	33.509	-106.386	28.739	-84.539	2000	18	37	EF	CA
5707	6/13/98	16:56:06	3	33.508	-106.371	39.155	-132.553	2000	2C	37	EF	CA
5707	6/13/98	20:26:06	3	33.507	-106.389	39.268	-78.759	2000	2C	37	EF	CA
5707	6/13/98	22:07:24	2	33.514	-106.374	29.298	-127.183	2000	2C	37	EF	CA
5707	6/14/98	21:57:10	1	33.536	-106.357	30.295	-121.321	2000	E2	25	EF	CB
5707	6/14/98	23:10:40	A	33.511	-106.359	42.340	-60.893	2000	2C	37	EF	CA
5707	6/15/98	02:27:10	2	33.500	-106.377	38.242	-84.148	2000	E2	25	EF	CB
5707	6/16/98	08:29:24	A	33.524	-106.350	22.679	-57.352	2000	CA	37	EF	CA
5707	6/16/98	10:12:09	0	33.513	-106.321	33.252	-105.088	2000	68	35	EF	CA
5707	6/17/98	11:41:24	3	33.511	-106.332	42.113	-147.780	2000	D9	29	EF	CB
5707	6/17/98	12:25:39	B	33.506	-106.331	27.124	-75.239	2000	3F	27	EF	CB
5707	6/17/98	14:08:24	3	33.513	-106.350	36.897	-123.408	2000	E6	27	EF	CB
5707	6/17/98	14:26:24	1	33.509	-106.370	23.380	-60.741	2000	D5	27	EF	CB
5707	6/17/98	16:08:24	1	33.496	-106.302	33.983	-108.488	2000	D5	27	EF	CB
5707	6/17/98	17:46:42	B	33.604	-106.198	43.900	-156.631	2000	E2	25	EF	CB
5707	6/18/98	11:26:09	B	33.500	-106.319	41.354	-141.493	2000	0	0	0	0
5707	6/18/98	12:04:54	A	33.500	-106.361	24.868	-65.236	2000	8F	37	EF	CA
5707	6/18/98	13:44:39	3	33.514	-106.351	34.873	-112.995	2000	8F	37	EF	CA
5707	6/18/98	15:25:09	B	33.556	-106.346	44.056	-161.118	2000	8F	37	EF	CA

5707	6/18/98	15:54:24	2	33.519	-106.393	32.689	-102.543	2000	8F	37	EF	CA
5707	6/18/98	17:35:39	1	33.516	-106.356	42.699	-150.574	2000	8F	37	EF	CA
5707	6/18/98	19:31:25	B	33.490	-106.356	44.451	-51.746	2000	E6	29	EF	CB
5707	6/19/98	09:39:45	2	33.519	-106.368	29.890	-89.271	2000	F7	29	EF	CB
5707	6/19/98	11:17:15	1	33.501	-106.345	40.129	-137.293	2000	F7	29	EF	CB
5707	6/19/98	13:21:03	1	33.529	-106.439	32.742	-102.620	2000	7B	47	EF	CB
5707	6/20/98	12:59:35	1	33.523	-106.368	30.530	-92.163	2000	E3	29	EF	CB
5707	6/20/98	14:40:50	2	33.521	-106.355	40.233	-139.732	2000	AE	27	EF	CA
5707	6/20/98	15:31:05	3	33.523	-106.369	30.110	-90.460	2000	A6	29	EF	CB
5707	6/20/98	17:11:35	2	33.519	-106.354	40.290	-138.284	2000	E3	29	EF	CB
5707	6/21/98	14:18:42	3	33.516	-106.353	38.192	-129.295	2000	2A	37	EF	CA
5707	6/21/98	15:17:57	3	33.519	-106.363	28.714	-84.471	2000	2A	37	EF	CA
5707	6/21/98	16:58:27	3	33.515	-106.354	39.030	-132.313	2000	2A	37	EF	CA
5707	6/21/98	20:37:51	B	33.536	-106.354	38.180	-84.230	2000	2A	37	EF	C8
5707	6/22/98	09:04:41	3	33.516	-106.358	26.228	-73.256	2000	B9	27	EF	CA
5707	6/22/98	10:44:26	1	33.510	-106.347	36.717	-121.258	2000	B9	27	EF	CA
5707	6/22/98	12:18:56	A	33.529	-106.349	26.320	-70.978	2000	B9	27	EF	CA
5707	6/22/98	15:37:28	B	33.563	-106.345	45.105	-167.109	2000	B9	27	EF	CA
5707	6/23/98	14:51:41	2	33.509	-106.349	26.035	-72.684	2000	58	45	EF	CB
5707	6/23/98	16:32:11	B	33.507	-106.255	36.505	-120.398	2000	AC	29	EF	CB
5707	6/23/98	21:57:49	3	33.509	-106.335	30.233	-121.494	2000	AC	27	EF	CA
5707	6/24/98	10:24:34	1	33.500	-106.311	34.418	-110.606	2000	50	27	EF	CB
5707	6/24/98	12:02:49	B	33.478	-106.386	44.076	-158.719	2000	50	27	EF	CB
5707	6/24/98	13:11:04	2	33.513	-106.368	31.770	-98.020	2000	50	27	EF	CB
5707	6/24/98	14:40:19	2	33.506	-106.348	24.814	-66.615	2000	50	27	EF	CB
5707	6/24/98	14:53:04	A	33.502	-106.344	41.352	-145.632	2000	50	27	EF	CB
5707	6/24/98	16:20:36	B	33.545	-106.194	35.314	-114.589	2000	50	27	EF	CB
5707	6/25/98	10:12:52	1	33.531	-106.449	33.270	-105.227	2000	DE	27	EF	CB
5707	6/25/98	11:54:07	A	33.507	-106.335	43.037	-153.540	2000	DE	27	EF	CB
5707	6/25/98	12:51:07	A	33.506	-106.335	29.633	-87.135	2000	DE	27	EF	CB
5707	6/25/98	13:32:22	0	33.511	-106.346	24.792	-64.557	2000	DE	27	EF	CB
5707	6/25/98	14:29:22	B	33.505	-106.351	23.756	-60.647	2000	DE	27	EF	CB
5707	6/25/98	14:31:37	3	33.503	-106.349	39.260	-135.096	2000	DE	27	EF	CB
5707	6/25/98	15:14:22	2	33.498	-106.336	34.734	-112.413	2000	DA	27	EF	CB
5707	6/25/98	16:08:39	1	33.491	-106.298	33.967	-108.509	2000	DE	27	EF	CB
5707	6/26/98	11:40:55	B	33.454	-106.458	41.964	-147.909	2000	0	0	0	0
5707	6/26/98	12:31:21	1	33.517	-106.355	27.556	-76.780	2000	0	7	FF	A0
5707	6/26/98	14:12:13	B	33.495	-106.304	37.134	-124.547	2000	0	0	0	0
5707	6/26/98	14:50:02	2	33.517	-106.382	32.583	-101.747	2000	0	0	0	0
5707	6/26/98	15:56:03	2	33.517	-106.393	32.568	-102.278	2000	0	0	0	0
5707	6/26/98	17:39:58	B	33.525	-106.374	42.486	-150.325	2000	0	0	0	0
5707	6/27/98	11:27:31	B	33.582	-106.527	41.269	-141.546	2000	7	37	EF	CB
5707	6/27/98	12:08:01	A	33.496	-106.365	25.285	-66.277	2000	7	37	EF	CB
5707	6/27/98	13:48:31	2	33.510	-106.348	35.060	-114.009	2000	7	37	EF	CB
5707	6/27/98	14:26:01	3	33.512	-106.365	30.305	-91.387	2000	7	37	EF	CB
5707	6/27/98	15:41:01	2	33.513	-106.371	31.394	-96.676	2000	7	37	EF	CB
5707	6/27/98	16:08:01	3	33.509	-106.355	40.079	-139.074	2000	7	37	EF	CB
5707	6/27/98	17:24:08	2	33.509	-106.354	41.443	-144.402	2000	7	37	EF	CB
5707	6/28/98	09:38:52	3	33.511	-106.356	29.805	-89.311	2000	7F	27	EF	CB
5707	6/28/98	11:20:52	A	33.508	-106.345	40.034	-137.134	2000	7F	27	EF	CB
5707	6/29/98	09:27:01	B	33.669	-106.444	28.946	-83.414	2000	0F	37	EF	CB
5707	6/29/98	11:07:31	3	33.512	-106.346	39.011	-131.965	2000	0F	37	EF	CB
5707	6/29/98	13:03:18	1	33.511	-106.358	30.788	-93.131	2000	E5	27	EF	CB
5707	6/29/98	13:43:48	3	33.513	-106.362	25.832	-70.232	2000	E5	27	EF	CB
5707	6/30/98	12:42:44	B	33.499	-106.418	28.641	-82.595	2000	0F	37	EF	CB
5707	6/30/98	13:20:59	B	33.499	-106.357	23.947	-59.580	2000	E5	27	EF	CB
5707	6/30/98	14:23:14	2	33.505	-106.354	38.253	-130.612	2000	0A	29	EF	CA
5707	6/30/98	14:59:59	1	33.486	-106.271	33.784	-107.693	2000	1B	37	EF	CB
5707	6/30/98	15:05:59	A	33.505	-106.364	27.516	-78.167	2000	0A	29	EF	CA

5707	6/30/98	16:46:29	A	33.502	-106.353	37.765	-126.383	2000	3	35	EF	CB
5707	7/1/98	14:00:24	3	33.503	-106.355	36.228	-119.963	2000	0	0	0	0
5707	7/1/98	14:38:58	3	33.510	-106.381	31.470	-97.033	2000	0	0	0	0
5707	7/1/98	14:50:06	A	33.507	-106.375	25.646	-71.754	2000	0	0	0	0
5707	7/1/98	16:19:06	2	33.506	-106.361	41.327	-144.888	2000	0	0	0	0
5707	7/1/98	16:34:40	3	33.505	-106.357	36.437	-120.283	2000	0	0	0	0
5707	7/1/98	20:27:38	2	33.506	-106.370	39.230	-78.971	2000	0	0	0	0
5707	7/2/98	10:35:31	2	33.506	-106.373	35.549	-115.951	2000	35	27	EF	CA
5707	7/2/98	11:57:16	2	33.505	-106.386	24.141	-61.518	2000	35	27	EF	CA
5707	7/2/98	12:13:46	B	33.489	-106.340	45.191	-163.980	2000	35	27	EF	CA
5707	7/2/98	13:37:46	0	33.518	-106.385	34.142	-109.180	2000	35	27	EF	CA
5707	7/2/98	14:17:48	1	33.494	-106.354	29.450	-86.279	2000	85	35	EF	CB
5707	7/2/98	14:41:03	A	33.494	-106.355	24.661	-66.405	2000	85	35	EF	CB
5707	7/2/98	15:15:33	B	33.582	-106.218	43.505	-157.405	2000	35	27	EF	CA
5707	7/3/98	14:56:24	A	33.497	-106.352	41.442	-146.838	2000	B3	29	EF	CB
5707	7/3/98	15:36:09	B	33.510	-106.350	37.083	-123.979	2000	85	35	EF	CB
5707	7/3/98	16:09:54	0	33.501	-106.304	33.904	-108.206	2000	85	35	EF	CB
5707	7/3/98	20:06:08	2	33.510	-106.359	41.349	-68.291	2000	B3	29	EF	CB
5707	7/3/98	21:48:56	A	33.513	-106.345	31.398	-116.066	2000	86	35	EF	CB
5707	7/4/98	21:34:26	1	33.518	-106.328	32.536	-110.980	2000	EF	29	EF	CB
5707	7/5/98	00:12:41	3	33.510	-106.363	36.838	-90.146	2000	EF	29	EF	CB
5707	7/5/98	00:52:26	3	33.508	-106.361	41.348	-67.922	2000	86	35	EF	CB
5707	7/5/98	01:38:56	A	33.517	-106.356	43.175	-59.649	2000	EF	29	EF	CB
5707	7/5/98	01:50:56	1	33.512	-106.354	26.920	-138.072	2000	85	35	EF	CB
5707	7/5/98	02:31:26	1	33.511	-106.347	31.662	-116.008	2000	25	37	EF	CA
5707	7/6/98	03:49:34	1	33.508	-106.349	23.690	-152.871	2000	7F	17	EF	CB
5707	7/6/98	04:45:04	B	33.507	-106.351	24.299	-149.462	2000	92	27	EF	CA
5707	7/6/98	09:52:21	1	33.513	-106.371	31.019	-94.668	2000	7F	17	EF	CB
5707	7/7/98	11:21:00	B	33.504	-106.353	39.944	-137.511	2000	7F	17	EF	CB
5707	7/7/98	11:46:30	B	33.494	-106.360	23.447	-56.778	2000	73	27	EF	CB
5707	7/7/98	13:28:30	0	33.504	-106.334	33.168	-104.682	2000	E0	29	EF	CA
5707	7/7/98	15:07:30	A	33.501	-106.346	42.614	-152.596	2000	F9	29	EF	CB
5707	7/7/98	15:18:45	2	33.508	-106.356	28.679	-84.269	2000	E0	37	EF	CB
5707	7/7/98	17:00:19	2	33.499	-106.345	38.948	-132.063	2000	BD	37	EF	CB
5707	7/8/98	11:08:46	3	33.492	-106.332	38.978	-132.091	2000	20	39	EF	CB
5707	7/8/98	13:03:31	1	33.499	-106.351	31.002	-94.314	2000	20	39	EF	CB
5707	7/8/98	13:44:46	2	33.499	-106.350	26.040	-71.486	2000	20	39	EF	CB
5707	7/8/98	14:44:01	1	33.493	-106.332	40.748	-142.220	2000	20	39	EF	CB
5707	7/8/98	15:06:31	2	33.493	-106.359	27.335	-78.304	2000	20	39	EF	CB
5707	7/8/98	16:45:47	B	33.473	-106.390	37.253	-125.613	2000	20	39	EF	CB
5707	7/9/98	09:16:24	2	33.498	-106.342	27.427	-78.930	2000	0	0	8	E3
5707	7/9/98	11:00:14	3	33.494	-106.331	37.795	-126.693	2000	0	0	0	0
5707	7/9/98	12:43:25	2	33.499	-106.344	28.860	-83.783	2000	20	0	0	0
5707	7/10/98	12:20:52	2	33.501	-106.358	26.580	-73.137	2000	5F	25	EF	CB
5707	7/10/98	13:59:07	3	33.497	-106.337	36.558	-121.198	2000	7E	29	EF	CB
5707	7/10/98	14:38:52	B	33.493	-106.496	31.247	-97.476	2000	7E	29	EF	CB
5707	7/10/98	16:20:07	A	33.493	-106.335	41.697	-146.183	2000	7E	29	EF	CB
5707	7/11/98	13:37:49	A	33.488	-106.299	34.432	-110.755	2000	9E	37	EF	CB
5707	7/11/98	15:58:49	B	33.503	-106.293	39.229	-135.235	2000	9E	37	EF	CB
5707	7/11/98	16:09:19	B	33.461	-106.077	33.962	-108.446	2000	9E	37	EF	CB
5707	7/11/98	17:49:49	2	33.489	-106.321	43.863	-156.240	2000	9E	37	EF	CB
5707	7/12/98	08:42:38	1	33.502	-106.344	23.841	-63.156	2000	D4	27	EF	CB
5707	7/12/98	10:26:08	2	33.488	-106.307	34.445	-110.794	2000	D4	27	EF	CB
5707	7/12/98	12:04:23	B	33.492	-106.350	44.128	-158.770	2000	D4	27	EF	CB
5707	7/12/98	13:15:50	3	33.501	-106.367	32.186	-100.089	2000	8	27	EF	CB
5707	7/12/98	13:57:50	1	33.503	-106.342	27.310	-77.161	2000	8	27	EF	CB
5707	7/12/98	14:17:20	1	33.514	-106.337	22.186	-54.327	2000	D4	27	EF	CB
5707	7/13/98	10:15:02	1	33.523	-106.461	33.289	-105.368	2000	BD	37	EF	CC
5707	7/13/98	11:54:47	A	33.481	-106.325	43.364	-153.532	2000	BD	37	EF	CC

5707	7/13/98	12:54:47	1	33.495	-106.318	30.054	-89.587	2000 BD	37	EF CC
5707	7/13/98	13:38:19	B	33.500	-106.314	25.344	-66.747	2000 62	27	EF CC
5707	7/13/98	14:36:49	3	33.503	-106.298	39.619	-137.499	2000 BD	37	EF CC
5707	7/13/98	15:16:34	B	33.518	-106.284	35.204	-114.542	2000 BD	37	EF CC
5707	7/14/98	14:13:44	0	33.497	-106.288	37.638	-126.873	2000 FD	24	A4 A4
5707	7/14/98	14:54:14	A	33.515	-106.359	32.936	-103.791	2000 EA	55	EF CC
5707	7/14/98	15:31:44	3	33.510	-106.300	29.998	-90.256	2000 BD	37	EF CC
5707	7/14/98	17:14:29	2	33.507	-106.286	40.096	-138.208	2000 EA	55	EF CC
5707	7/14/98	21:27:28	B	33.409	-106.785	33.718	-105.326	2000 62	27	EF CC
5707	7/15/98	09:50:20	3	33.507	-106.305	31.035	-95.016	2000 57	27	EF CC
5707	7/15/98	11:33:05	2	33.499	-106.296	41.139	-142.783	2000 57	27	EF CC
5707	7/15/98	12:12:05	2	33.506	-106.305	25.759	-68.552	2000 57	27	EF CC
5707	7/15/98	13:51:50	1	33.504	-106.296	35.498	-116.330	2000 57	27	EF CC
5707	7/15/98	14:33:05	3	33.513	-106.309	30.762	-93.394	2000 57	27	EF CC
5707	7/15/98	15:22:10	3	33.510	-106.306	28.824	-84.239	2000 57	27	EF CC
5707	7/15/98	16:12:25	2	33.507	-106.296	40.533	-141.250	2000 57	27	EF CC
5707	7/16/98	09:42:54	A	33.509	-106.311	30.007	-89.590	2000 64	37	EF CC
5707	7/16/98	11:20:24	A	33.506	-106.295	40.211	-137.688	2000 64	37	EF CC
5707	7/16/98	11:50:23	A	33.481	-106.343	23.633	-58.086	2000 64	37	EF CC
5707	7/16/98	14:10:38	2	33.499	-106.308	28.583	-82.836	2000 64	37	EF CC
5707	7/16/98	15:09:08	B	33.478	-106.328	27.448	-78.249	2000 64	37	EF CC
5707	7/16/98	15:50:54	3	33.473	-106.307	38.420	-130.613	2000 64	37	EF CC
5707	7/16/98	16:48:39	2	33.473	-106.301	37.639	-125.933	2000 64	37	EF CC
5707	7/17/98	11:11:40	2	33.495	-106.330	38.888	-132.027	2000 8B	27	EF CB
5707	7/17/98	13:08:40	2	33.491	-106.342	31.348	-95.322	2000 8B	27	EF CB
5707	7/17/98	13:47:40	2	33.490	-106.335	26.275	-72.404	2000 8B	27	EF CB
5707	7/17/98	14:46:55	3	33.488	-106.351	40.821	-143.203	2000 8B	27	EF CB
5707	7/17/98	14:55:10	A	33.492	-106.347	26.185	-72.138	2000 8B	27	EF CB
5707	7/17/98	16:37:26	A	33.490	-106.343	36.373	-120.178	2000 6C	27	EF CB
5707	7/17/98	22:34:41	A	33.493	-106.348	26.337	-137.572	2000 19	35	EF CB
5707	7/17/98	22:46:41	B	33.541	-106.445	44.551	-49.185	2000 19	37	EF CB
5707	7/18/98	00:23:26	3	33.489	-106.363	35.283	-97.150	2000 19	35	EF CB
5707	7/18/98	02:04:41	3	33.494	-106.343	25.382	-145.056	2000 19	35	EF CB
5707	7/18/98	02:18:56	2	33.489	-106.349	39.718	-77.393	2000 19	35	EF CB
5707	7/18/98	02:42:56	2	33.489	-106.342	30.220	-122.339	2000 19	35	EF CB
5707	7/18/98	03:56:26	3	33.492	-106.342	29.390	-125.549	2000 19	35	EF CB
5707	7/19/98	09:10:37	3	33.477	-106.356	26.509	-73.587	2000 14	37	EF CA
5707	7/19/98	10:50:22	2	33.474	-106.350	36.652	-121.423	2000 55	27	EF CB
5707	7/19/98	12:19:31	B	33.476	-106.138	26.446	-73.925	2000 55	27	EF CB
5707	7/20/98	12:00:39	2	33.450	-106.340	24.603	-63.888	2000 C0	37	EF CB
5707	7/20/98	13:38:54	3	33.459	-106.297	0.131	0.632	2000 55	27	EF CB
5707	7/20/98	14:21:39	2	33.467	-106.323	0.272	-0.884	2000 95	47	EF CA
5707	7/20/98	15:20:09	B	33.513	-106.292	43.733	-159.717	2000 97	29	EF CA
5707	7/20/98	15:58:24	2	33.475	-106.357	32.548	-102.004	2000 77	37	EF CA
5707	7/21/98	08:47:00	2	33.473	-106.326	24.112	-62.897	2000 E5	29	E7 EC
5707	7/21/98	10:24:30	0	33.456	-106.285	34.466	-110.961	2000 E5	29	EF CC
5707	7/21/98	11:38:45	B	33.437	-106.339	22.749	-53.293	2000 E5	29	EF CC
5707	7/21/98	12:05:00	B	33.441	-106.390	44.122	-158.773	2000 E5	29	EF CC
5707	7/21/98	13:17:32	A	33.477	-106.351	32.413	-101.349	2000 2C	27	EF CB
5707	7/21/98	13:55:47	B	33.427	-106.547	26.232	-77.071	2000 2C	27	EF CB
5707	7/22/98	10:14:16	0	33.508	-106.491	33.245	-105.325	2000 9A	39	EF 8A
5707	7/22/98	11:56:16	A	33.472	-106.347	43.156	-153.736	2000 9A	39	EF CA
5707	7/22/98	12:56:53	0	33.493	-106.406	30.251	-90.640	2000 9A	39	EF CA
5707	7/22/98	13:38:53	3	33.497	-106.371	25.302	-67.534	2000 48	27	EF CA
5707	7/22/98	14:35:53	2	33.499	-106.363	40.026	-138.510	2000 48	27	EF CA
5707	7/23/98	10:04:23	2	33.509	-106.384	32.116	-100.121	2000 DB	39	EF CA
5707	7/23/98	11:43:23	A	33.499	-106.369	42.390	-148.388	2000 DB	39	EF CA
5707	7/23/98	12:34:23	1	33.505	-106.369	28.066	-80.163	2000 DB	39	EF CA
5707	7/23/98	13:16:23	A	33.495	-106.365	23.003	-57.164	2000 DB	39	EF CA

5707	7/23/98 14:14:56	2	33.495	-106.350	37.845	-127.960	2000 C9	27	EF	CA
5707	7/23/98 14:57:41	0	33.505	-106.417	33.182	-104.835	2000 C9	27	EF	CA
5707	7/24/98 13:52:49	B	33.547	-106.352	35.313	-117.111	2000 BD	27	EF	CA
5707	7/24/98 14:38:04	A	33.508	-106.380	31.088	-94.466	2000 C9	35	EF	CB
5707	7/24/98 16:50:48	3	33.503	-106.358	37.581	-125.995	2000 C9	27	EF	CA
5707	7/24/98 19:35:48	B	33.508	-106.365	44.372	-52.216	2000 C9	27	EF	CA
5707	7/24/98 21:16:30	1	33.502	-106.395	34.621	-100.742	2000 C9	27	EF	CA
5707	7/25/98 09:40:15	1	33.505	-106.399	29.828	-89.656	2000 F1	19	EF	CA
5707	7/25/98 11:23:00	3	33.509	-106.382	40.014	-137.435	2000 F1	19	EF	CA
5707	7/25/98 13:32:00	0	33.472	-106.244	-0.410	1.537	2000 F1	19	EF	CA
5707	7/25/98 14:09:29	B	33.510	-106.447	28.355	-83.361	2000 F1	19	EF	CA
5707	7/25/98 15:09:45	B	33.536	-106.338	42.930	-154.981	2000 F1	19	EF	CA
5707	7/25/98 15:54:00	3	33.502	-106.386	38.546	-131.680	2000 A9	19	EF	CA
5707	7/26/98 03:55:26	A	33.476	-106.376	29.513	-125.084	2000 E8	19	EF	CA
5707	7/26/98 09:31:42	2	33.479	-106.384	28.482	-84.077	2000 C5	19	EF	CA
5707	7/27/98 09:19:27	1	33.462	-106.374	27.457	-78.927	2000 68	37	EF	CA
5707	7/27/98 11:01:43	3	33.451	-106.358	37.746	-126.815	2000 66	19	EF	CA
5707	7/28/98 10:47:29	3	33.427	-106.330	36.743	-121.642	2000 69	29	EF	CB
5707	7/28/98 12:25:44	2	33.416	-106.340	27.090	-75.451	2000 68	37	EF	CA
5707	7/28/98 14:03:59	2	33.414	-106.326	36.891	-123.431	2000 68	37	EF	CA
5707	7/28/98 14:46:44	B	33.434	-106.361	32.190	-100.298	2000 9E	29	EF	CB
5707	7/28/98 15:59:29	1	33.425	-106.349	32.487	-101.934	2000 66	19	EF	CA
5707	7/28/98 16:23:29	B	33.428	-106.307	41.879	-147.504	2000 8E	37	EF	CB
5707	7/28/98 17:38:49	A	33.421	-106.314	42.562	-150.033	2000 9E	29	EF	CB
5707	7/29/98 05:00:53	B	33.447	-106.379	23.086	-155.013	2000 31	29	EF	CA
5707	7/29/98 08:57:52	3	33.431	-106.369	25.091	-68.269	2000 31	29	EF	CA
5707	7/29/98 10:38:22	3	33.425	-106.341	35.509	-116.184	2000 31	29	EF	CA
5707	7/29/98 12:01:16	2	33.435	-106.370	24.674	-65.086	2000 31	29	EF	CA
5707	7/30/98 13:18:56	1	33.440	-106.393	32.606	-102.360	2000 66	15	ED	CA
5707	7/30/98 14:03:11	B	33.442	-106.368	27.845	-79.268	2000 D2	17	EF	CA
5707	7/30/98 14:58:41	A	33.414	-106.375	42.410	-150.360	2000 66	15	EF	CA
5707	7/30/98 15:33:56	3	33.431	-106.367	29.785	-89.865	2000 AF	19	EF	CA
5707	7/30/98 15:43:41	2	33.426	-106.352	37.636	-126.819	2000 66	15	EF	CA
5707	7/30/98 17:13:41	0	33.430	-106.360	40.147	-137.601	2000 7A	35	EE	CB
5707	7/31/98 12:59:59	3	33.433	-106.384	30.411	-91.668	2000 49	29	EF	CA
5707	7/31/98 13:40:29	B	33.456	-106.366	25.718	-68.558	2000 49	29	EF	CA
5707	7/31/98 14:38:59	A	33.432	-106.360	40.082	-139.602	2000 49	29	EF	CA
5707	7/31/98 15:20:59	A	33.460	-106.379	28.582	-83.834	2000 49	28	EF	C9
5707	7/31/98 15:20:59	2	33.451	-106.355	35.500	-116.369	2000 49	29	EF	CA
5707	7/31/98 17:01:29	B	33.644	-106.232	38.678	-131.457	2000 49	29	EF	CA
5707	8/1/98 10:04:16	3	33.488	-106.393	32.165	-100.282	2000 FA	36	E5	CA
5707	8/1/98 11:44:46	1	33.476	-106.364	42.307	-148.287	2000 FA	37	EF	CA
5707	8/1/98 12:35:46	1	33.488	-106.376	28.273	-81.108	2000 FA	37	EF	CA
5707	8/1/98 13:19:51	2	33.483	-106.360	23.428	-58.159	2000 EA	27	EF	CA
5707	8/1/98 14:13:06	B	33.447	-106.270	38.318	-128.370	2000 FA	37	EF	CA
5707	8/2/98 01:31:57	3	33.505	-106.358	28.533	-130.914	2000 F7	35	EF	CA
5707	8/2/98 02:14:42	1	33.517	-106.322	33.128	-108.207	2000 F7	35	EF	CA
5707	8/2/98 02:30:27	3	33.506	-106.381	0.017	-0.559	2000 F7	35	EF	CA
5707	8/2/98 04:10:57	3	33.503	-106.369	28.104	-131.215	2000 F7	35	EF	CA
5707	8/3/98 09:42:05	3	33.477	-106.361	29.827	-89.645	2000 F7	35	EF	CA
5707	8/3/98 11:21:05	B	33.481	-106.361	40.078	-137.030	2000 82	37	EF	CA
5707	8/3/98 11:51:50	2	33.475	-106.355	23.825	-60.262	2000 82	37	EF	CA
5707	8/3/98 13:30:05	0	33.459	-106.284	33.879	-108.286	2000 48	37	EF	C9
5707	8/3/98 14:14:51	1	33.471	-106.362	28.949	-84.905	2000 82	37	EF	CA
5707	8/3/98 14:42:36	A	33.499	-106.371	24.492	-66.069	2000 48	37	EF	C9
5707	8/3/98 15:51:36	0	33.473	-106.345	39.035	-133.055	2000 82	37	EF	CA
5707	8/4/98 09:31:54	3	33.483	-106.375	28.649	-84.185	2000 20	40	0	0
5707	8/4/98 11:10:33	2	33.477	-106.361	39.063	-132.288	2000 0	0	0	0
5707	8/4/98 13:10:42	1	33.487	-106.368	31.692	-97.570	2000 0	0	0	0

5707	8/4/98	13:53:43	1	33.484	-106.354	26.848	-74.412	2000	0	0	0	0
5707	8/4/98	14:31:32	B	33.524	-106.362	23.615	-59.818	2000	0	0	0	0
5707	8/5/98	02:54:28	B	33.454	-106.221	28.649	-125.308	2000	0	0	40	A0
5707	8/5/98	03:36:27	2	33.501	-106.353	32.056	-112.948	2000	0	0	0	0
5707	8/5/98	09:21:24	A	33.500	-106.385	27.605	-78.812	2000	0	0	0	63
5707	8/5/98	10:57:49	B	33.516	-106.381	38.226	-125.750	2000	0	0	0	0
5707	8/6/98	05:03:26	B	33.433	-106.386	23.047	-155.156	2000	83	37	EF	CA
5707	8/6/98	09:12:25	B	33.518	-106.328	26.564	-73.647	2000	83	37	EF	8A
5707	8/6/98	10:51:15	A	33.508	-106.365	36.694	-121.645	2000	83	37	EF	CA
5707	8/7/98	04:48:35	1	33.502	-106.362	24.347	-148.927	2000	8A	19	EF	CA
5707	8/7/98	08:59:04	2	33.505	-106.371	25.280	-68.297	2000	8A	19	EF	CA
5707	8/7/98	10:39:04	3	33.500	-106.356	35.607	-116.235	2000	79	27	EF	CA
5707	8/7/98	12:04:34	0	33.506	-106.388	25.137	-65.920	2000	79	27	EF	CA
5707	8/8/98	10:28:54	2	33.468	-106.335	34.444	-110.875	2000	0	0	0	0
5707	8/9/98	10:16:31	0	33.502	-106.501	33.291	-105.518	2000	99	37	EF	CA
5707	8/9/98	11:58:18	A	33.466	-106.351	43.173	-153.752	2000	B2	27	EF	CA
5707	8/9/98	13:00:33	2	33.469	-106.362	30.747	-92.786	2000	99	37	EF	CA
5707	8/10/98	10:06:54	3	33.478	-106.382	32.158	-100.234	2000	F9	17	EF	CA
5707	8/10/98	11:46:39	2	33.474	-106.354	42.195	-148.274	2000	F9	17	EF	CA
5707	8/10/98	12:37:26	A	33.463	-106.374	28.107	-82.274	2000	F9	17	EF	CA
5707	8/10/98	13:18:41	A	33.493	-106.346	23.245	-59.533	2000	F9	17	EF	CA
5707	8/11/98	13:57:35	2	33.484	-106.367	36.171	-119.597	2000	70	35	EF	CA
5707	8/11/98	14:38:50	0	33.482	-106.393	31.378	-96.314	2000	70	35	EF	CA
5707	8/11/98	14:44:50	1	33.480	-106.387	24.604	-65.684	2000	F9	17	EF	CA
5707	8/11/98	16:17:50	2	33.472	-106.369	41.214	-144.240	2000	29	27	EF	CB
5707	8/11/98	16:24:35	1	33.460	-106.350	35.017	-113.597	2000	29	27	EF	CB
5707	8/11/98	18:04:20	B	33.469	-106.359	44.654	-161.697	2000	70	35	EF	CA
5707	8/11/98	19:38:59	B	33.464	-106.370	44.391	-52.341	2000	72	29	EF	CA
5707	8/12/98	01:12:48	1	33.480	-106.364	30.398	-121.462	2000	CF	37	EF	CA
5707	8/12/98	01:55:33	1	33.474	-106.392	35.059	-98.619	2000	CF	37	EF	CA
5707	8/12/98	02:07:33	2	33.472	-106.379	40.953	-71.059	2000	CF	37	EF	CA
5707	8/12/98	03:37:33	B	33.433	-106.390	25.166	-146.581	2000	CF	37	EF	CA
5707	8/12/98	03:46:33	A	33.481	-106.366	30.841	-118.861	2000	CF	37	EF	CA
5707	8/12/98	14:17:27	2	33.461	-106.347	29.214	-85.985	2000	0	0	0	0
5707	8/12/98	14:31:32	1	33.464	-106.346	23.213	-59.785	2000	0	0	0	0
5707	8/12/98	15:54:36	B	33.444	-106.267	39.075	-133.454	2000	0	0	0	0
5707	8/12/98	16:09:26	Z	33.440	-106.271	33.634	-107.051	2000	0	0	0	0
5707	8/12/98	19:26:43	B	33.403	-106.309	45.305	-46.710	2000	0	0	0	0
5707	8/12/98	21:06:11	A	33.434	-106.332	35.529	-95.400	2000	0	0	0	0
5707	8/13/98	01:56:20	B	33.437	-106.440	42.030	-65.071	2000	0	0	0	0
5707	8/13/98	02:31:58	B	33.492	-106.268	22.876	-159.026	2000	0	0	0	0
5707	8/13/98	03:13:30	3	33.413	-106.280	27.169	-136.059	2000	0	0	0	0
5707	8/13/98	03:36:30	3	33.410	-106.262	31.965	-112.865	2000	0	0	0	0
5707	8/13/98	09:32:02	2	33.412	-106.302	28.640	-84.488	2000	4C	37	EF	CC
5707	8/13/98	14:51:32	1	33.410	-106.294	41.481	-146.461	2000	0	0	0	0
5707	8/13/98	15:35:18	A	33.410	-106.282	36.903	-123.315	2000	0	0	0	0
5707	8/13/98	15:59:46	A	33.415	-106.331	32.424	-101.310	2000	0	0	0	0
5707	8/13/98	17:41:22	2	33.410	-106.299	42.351	-149.615	2000	0	0	0	0
5707	8/13/98	20:55:46	3	33.406	-106.314	36.922	-89.938	2000	0	0	2	2
5707	8/14/98	02:53:07	0	33.440	-106.284	29.411	-125.499	2000	0	0	0	0
5707	8/14/98	03:24:17	1	33.467	-106.134	33.275	-107.011	2000	0	0	0	0
5707	8/14/98	05:03:40	1	33.429	-106.310	22.727	-154.769	2000	0	0	0	0
5707	8/14/98	09:23:08	B	33.396	-106.385	27.565	-79.063	2000	7C	13	EF	CB
5707	8/15/98	03:11:58	B	33.415	-106.455	34.548	-101.176	2000	0	0	0	0
5707	8/15/98	04:10:58	B	33.462	-106.327	21.912	-162.818	2000	B6	19	EF	CB
5707	8/15/98	04:47:43	A	33.452	-106.329	24.397	-148.706	2000	B6	19	EF	CB
5707	8/15/98	10:49:44	2	33.444	-106.308	36.728	-121.599	2000	DD	19	EF	CB
5707	8/16/98	03:49:28	2	33.457	-106.322	23.679	-152.166	2000	0	0	0	0
5707	8/16/98	04:35:53	B	33.455	-106.328	25.661	-142.733	2000	0	0	0	0

5707	8/16/98 08:59:55	1	33.468	-106.330	25.238	-68.298	2000 0	0	0	0
5707	8/16/98 10:40:33	3	33.458	-106.315	35.576	-116.285	2000 1E	27	EF	CB
5707	8/17/98 04:25:04	A	33.428	-106.317	26.870	-136.721	2000 0	0	0	0
5707	8/17/98 08:49:55	A	33.429	-106.326	24.161	-63.028	2000 BC	47	EF	CB
5707	8/17/98 10:31:10	B	33.344	-106.077	34.441	-111.200	2000 BC	47	EF	CB
5707	8/17/98 12:07:55	A	33.429	-106.296	44.532	-159.380	2000 B4	37	EF	CC
5707	8/18/98 10:18:25	1	33.471	-106.494	33.255	-105.486	2000 10	27	EF	CB
5707	8/18/98 11:59:19	A	33.421	-106.316	43.125	-153.832	2000 50	37	EF	CB
5707	8/18/98 13:00:49	B	33.360	-106.296	31.001	-93.664	2000 10	27	EF	CB
5707	8/19/98 10:07:25	1	33.446	-106.362	32.112	-100.233	2000 0B	19	EF	CB
5707	8/19/98 10:07:25	1	33.446	-106.362	32.112	-100.233	2000 0B	19	EF	CB
5707	8/19/98 11:46:25	A	33.436	-106.313	42.395	-148.285	2000 0B	19	EF	4B
5707	8/19/98 11:46:25	A	33.436	-106.313	42.395	-148.285	2000 0B	19	EF	4B
5707	8/19/98 12:38:39	B	33.424	-106.325	28.779	-83.311	2000 24	47	EF	CB
5707	8/19/98 12:38:39	B	33.424	-106.325	28.779	-83.311	2000 24	47	EF	CB
5707	8/19/98 13:21:24	A	33.460	-106.350	23.553	-60.413	2000 24	47	EF	CB
5707	8/19/98 13:21:24	A	33.460	-106.350	23.553	-60.413	2000 24	47	EF	CB
5707	8/20/98 01:36:34	3	33.446	-106.331	27.945	-133.080	2000 A8	25	EF	CB
5707	8/20/98 01:36:34	3	33.446	-106.331	27.945	-133.080	2000 A8	25	EF	CB
5707	8/20/98 02:10:19	A	33.442	-106.363	41.166	-70.455	2000 A8	25	EF	CB
5707	8/20/98 02:10:19	A	33.442	-106.363	41.166	-70.455	2000 A8	25	EF	CB
5707	8/20/98 02:22:19	2	33.451	-106.312	32.637	-110.192	2000 A8	25	EF	CB
5707	8/20/98 02:22:19	2	33.451	-106.312	32.637	-110.192	2000 A8	25	EF	CB
5707	8/20/98 03:50:04	3	33.447	-106.324	30.732	-118.701	2000 A8	25	EF	CB
5707	8/20/98 03:50:04	3	33.447	-106.324	30.732	-118.701	2000 A8	25	EF	CB
5707	8/20/98 13:56:35	2	33.446	-106.330	36.413	-120.746	2000 9A	37	EF	CB
5707	8/20/98 13:56:35	2	33.446	-106.330	36.413	-120.746	2000 9A	37	EF	CB
5707	8/20/98 14:33:20	A	33.445	-106.344	23.486	-59.570	2000 9A	17	7B	CB
5707	8/20/98 14:33:20	A	33.445	-106.344	23.486	-59.570	2000 9A	17	7B	CB
5707	8/20/98 14:41:35	2	33.449	-106.356	31.608	-97.284	2000 9A	37	EF	CB
5707	8/20/98 14:41:35	2	33.449	-106.356	31.608	-97.284	2000 9A	37	EF	CB
5707	8/20/98 16:11:35	1	33.419	-106.223	33.741	-107.708	2000 9A	37	EF	CB
5707	8/20/98 16:11:35	1	33.419	-106.223	33.741	-107.708	2000 9A	37	EF	CB
5707	8/20/98 17:52:50	A	33.424	-106.323	43.831	-155.510	2000 9A	37	EF	CB
5707	8/20/98 17:52:50	A	33.424	-106.323	43.831	-155.510	2000 9A	37	EF	CB
5707	8/21/98 01:17:19	B	33.385	-106.383	29.985	-122.697	2000 0	0	0	0
5707	8/21/98 02:00:20	A	33.416	-106.336	34.698	-99.903	2000 0	0	0	40
5707	8/21/98 03:33:02	1	33.427	-106.312	32.056	-112.767	2000 0	0	0	0
5707	8/21/98 03:37:29	1	33.424	-106.328	24.919	-147.393	2000 0	0	0	0
5707	8/21/98 13:38:30	B	33.458	-106.266	34.209	-110.195	2000 5	19	EF	CB
5707	8/21/98 14:19:45	3	33.423	-106.341	29.352	-86.918	2000 5	19	EF	CB
5707	8/21/98 15:16:00	B	33.433	-106.330	43.450	-158.464	2000 5	19	EF	CB
5707	8/21/98 16:00:15	2	33.424	-106.362	32.345	-101.443	2000 5	19	EF	CB
5707	8/21/98 16:00:15	A	33.417	-106.332	39.083	-134.801	2000 5	19	EF	CB
5707	8/21/98 17:40:45	A	33.412	-106.336	42.435	-149.506	2000 5	19	EF	CB
5707	8/21/98 19:29:30	B	33.396	-106.293	45.348	-47.126	2000 5	19	EF	CB
5707	8/21/98 21:08:29	3	33.414	-106.349	35.806	-95.182	2000 5	19	EF	CB
5707	8/22/98 09:33:17	3	33.421	-106.340	28.621	-84.312	2000 0	0	0	0
5707	8/22/98 11:17:07	2	33.420	-106.323	38.778	-132.484	2000 0	0	0	0
5707	8/22/98 13:12:49	1	33.423	-106.332	32.077	-99.802	2000 0	0	2	0
5707	8/22/98 13:57:19	2	33.422	-106.327	27.164	-76.488	2000 0	0	0	0
5707	8/22/98 14:55:15	A	33.423	-106.321	41.422	-147.916	2000 0	0	0	0
5707	8/22/98 15:39:00	3	33.419	-106.320	37.037	-124.301	2000 0	0	0	0
5707	8/22/98 15:47:10	2	33.420	-106.335	31.033	-95.538	2000 0	0	0	0
5707	8/23/98 02:54:37	1	33.429	-106.295	29.091	-126.585	2000 FB	37	EF	CC
5707	8/23/98 03:12:37	2	33.424	-106.341	34.659	-100.663	2000 FB	37	EF	CC
5707	8/23/98 04:52:22	A	33.409	-106.317	24.056	-148.440	2000 FB	37	EF	CC
5707	8/23/98 09:21:31	1	33.425	-106.325	27.419	-79.083	2000 9F	37	EF	CB
5707	8/24/98 04:37:35	A	33.422	-106.288	25.544	-142.697	2000 0	0	0	0

5707	8/24/98 09:11:32	B	33.424	-106.267	26.533	-73.610	2000 0A	39	EF	CC
5707	8/24/98 10:50:46	3	33.417	-106.280	36.725	-121.657	2000 0A	39	EF	CC
5707	8/25/98 03:49:41	B	33.447	-106.172	23.775	-153.240	2000 FC	37	EF	CC
5707	8/25/98 04:25:41	2	33.431	-106.288	26.883	-136.595	2000 FC	37	EF	CC
5707	8/25/98 09:00:10	2	33.429	-106.300	25.136	-68.363	2000 FC	37	EF	CC
5707	8/25/98 10:41:14	3	33.425	-106.281	35.483	-116.215	2000 27	27	EF	CC
5707	8/26/98 04:14:31	A	33.429	-106.295	28.117	-130.634	2000 0	0	0	0
5707	8/26/98 08:50:50	B	33.445	-106.284	24.272	-63.132	2000 1	0	0	0
5707	8/26/98 10:28:44	3	33.420	-106.276	34.453	-111.066	2000 0	0	0	0
5707	8/26/98 12:08:56	A	33.411	-106.301	44.601	-159.280	2000 48	0	0	0
5707	8/27/98 10:19:46	0	33.484	-106.580	33.224	-105.374	2000 C0	37	EF	CB
5707	8/27/98 11:59:19	1	33.415	-106.309	43.217	-153.651	2000 C0	37	EF	CB
5707	8/27/98 13:02:19	2	33.432	-106.321	30.900	-94.928	2000 17	37	EF	CB
5707	8/28/98 10:04:19	B	33.421	-106.653	31.467	-99.281	2000 48	27	EF	CB
5707	8/28/98 11:50:03	B	33.461	-106.350	42.050	-148.418	2000 48	27	EF	CB
5707	8/28/98 13:25:39	1	33.419	-106.336	23.955	-61.207	2000 48	27	EF	CB
5707	8/28/98 19:50:04	A	33.429	-106.332	43.396	-57.730	2000 0	0	0	0
5707	8/28/98 21:30:56	0	33.372	-106.585	33.598	-105.532	2000 0	0	0	0
5707	8/28/98 23:14:02	B	33.403	-106.372	23.037	-154.207	2000 0	0	0	0
5707	8/28/98 23:58:31	2	33.425	-106.324	37.473	-86.448	2000 0	0	0	0
5707	8/29/98 00:01:29	1	33.425	-106.323	37.596	-86.018	2000 0	0	0	0
5707	8/29/98 00:43:51	A	33.429	-106.322	42.065	-63.364	2000 0	10	0	0
5707	8/29/98 01:40:57	2	33.422	-106.313	27.601	-133.861	2000 0	0	0	0
5707	8/29/98 01:55:47	B	33.411	-106.349	42.010	-64.447	2000 0	0	0	0
5707	8/29/98 09:58:05	1	33.426	-106.322	30.987	-94.966	2000 0	0	0	0
5707	8/29/98 11:35:58	B	33.431	-106.300	40.980	-142.881	2000 0	0	0	0
5707	8/29/98 12:20:28	1	33.429	-106.330	26.724	-73.884	2000 0	0	0	0
5707	8/29/98 13:02:01	0	33.422	-106.299	21.507	-50.825	2000 1B	27	EF	CB
5707	8/29/98 13:57:31	2	33.428	-106.310	36.632	-121.895	2000 1B	27	EF	CB
5707	8/30/98 11:26:10	2	33.429	-106.306	40.006	-137.536	2000 21	27	EF	CC
5707	8/30/98 11:56:10	B	33.443	-106.305	24.709	-63.314	2000 21	27	EF	CC
5707	8/30/98 13:37:47	0	33.416	-106.241	34.476	-111.410	2000 EC	26	EF	CC
5707	8/30/98 14:22:02	3	33.436	-106.313	29.594	-87.914	2000 21	27	EF	CC
5707	8/30/98 15:15:17	A	33.444	-106.255	44.082	-159.582	2000 21	27	EF	CC
5707	8/31/98 03:09:07	1	33.438	-106.321	34.673	-100.421	2000 0	0	0	0
5707	8/31/98 03:19:30	3	33.443	-106.293	26.737	-137.907	2000 0	2	D2	4D
5707	8/31/98 09:34:07	3	33.441	-106.310	28.643	-84.361	2000 0	0	0	0
5707	8/31/98 14:53:14	1	33.438	-106.308	42.055	-148.875	2000 0	0	0	0
5707	8/31/98 15:35:31	3	33.443	-106.310	29.598	-89.148	2000 0	0	0	0
5707	8/31/98 15:41:27	3	33.440	-106.290	0.045	0.545	2000 0	0	0	0
5707	8/31/98 17:16:23	3	33.440	-106.293	39.968	-137.026	2000 0	0	0	0
5707	8/31/98 20:56:27	2	33.432	-106.314	36.911	-89.924	2000 A3	29	EF	CC
5707	9/1/98 03:00:53	B	33.482	-106.582	28.319	-127.982	2000 0	0	0	0
5707	9/1/98 03:01:38	A	33.434	-106.312	36.031	-94.248	2000 0	0	0	0
5707	9/1/98 04:40:16	2	33.438	-106.296	25.454	-142.383	2000 0	0	0	0
5707	9/1/98 09:25:42	A	33.429	-106.326	27.680	-79.101	2000 15	37	EF	CC
5707	9/1/98 15:17:57	B	33.583	-106.342	34.599	-114.269	2000 2	15	18	A0
5707	9/1/98 15:22:15	B	33.433	-106.318	28.372	-83.079	2000 0	0	0	0
5707	9/1/98 17:01:38	2	33.417	-106.297	38.845	-131.439	2000 0	0	0	8
5707	9/1/98 20:47:51	2	33.406	-106.321	38.089	-84.465	2000 10	0	0	0
5707	9/1/98 22:28:48	2	33.407	-106.301	27.635	-132.251	2000 0	0	0	33
5707	9/2/98 04:27:28	A	33.413	-106.304	26.825	-136.356	2000 75	37	EF	CC
5707	9/2/98 10:54:22	3	33.412	-106.295	36.623	-121.693	2000 75	37	EF	CC
5707	9/2/98 20:34:48	2	33.407	-106.327	39.087	-79.182	2000 0	0	0	0
5707	9/2/98 22:19:34	A	33.453	-106.288	29.002	-126.713	2000 BC	27	EF	CC
5707	9/2/98 23:48:04	A	33.414	-106.329	38.265	-81.468	2000 BC	27	EF	CC
5707	9/3/98 08:59:18	B	33.344	-106.211	25.129	-68.198	2000 6D	17	EF	CC
5707	9/3/98 10:40:32	2	33.407	-106.294	35.579	-116.373	2000 6D	17	EF	CC
5707	9/3/98 12:08:31	3	33.413	-106.308	25.662	-69.269	2000 88	27	EF	CC

5707	9/3/98 23:27:07	3	33.421	-106.307	40.509	-71.075	2000 0	0	0	0
5707	9/4/98 01:02:47	B	33.415	-106.334	30.966	-119.095	2000 0	0	0	0
5707	9/4/98 01:53:58	1	33.423	-106.324	35.653	-95.582	2000 0	0	0	0
5707	9/4/98 02:22:53	3	33.425	-106.315	39.805	-76.583	2000 0	0	0	0
5707	9/4/98 03:31:51	2	33.423	-106.300	25.460	-143.602	2000 0	0	0	0
5707	9/4/98 04:03:00	3	33.432	-106.301	29.452	-124.386	2000 0	0	0	0
5707	9/4/98 12:11:26	1	33.433	-106.306	44.208	-159.198	2000 0	0	0	0
5707	9/4/98 14:10:50	3	33.422	-106.317	28.452	-83.123	2000 0	0	0	4
5707	9/4/98 14:45:41	B	33.437	-106.316	24.622	-65.127	2000 0	0	0	0
5707	9/4/98 15:05:43	2	33.422	-106.304	43.052	-154.580	2000 0	0	0	0
5707	9/4/98 15:51:42	3	33.420	-106.308	38.503	-130.803	2000 0	0	0	0
5707	9/4/98 16:26:33	A	33.417	-106.278	34.784	-112.944	2000 0	0	0	0
5707	9/4/98 18:06:46	2	33.416	-106.308	44.785	-161.228	2000 0	0	0	0
5707	9/5/98 00:45:15	1	33.435	-106.242	32.980	-108.526	2000 0	0	0	2
5707	9/5/98 01:29:45	3	33.419	-106.317	37.731	-85.434	2000 0	0	0	0
5707	9/5/98 02:11:17	2	33.423	-106.321	41.194	-70.284	2000 0	0	0	0
5707	9/5/98 02:25:22	1	33.435	-106.301	22.984	-156.150	2000 0	0	0	0
5707	9/5/98 03:09:52	3	33.425	-106.306	27.706	-133.173	2000 0	0	0	0
5707	9/5/98 03:49:10	3	33.428	-106.290	30.716	-118.682	2000 0	0	0	0
5707	9/5/98 13:04:34	2	33.409	-106.364	0.730	1.563	2000 46	15	EF	CC
5707	9/5/98 13:47:19	1	33.431	-106.314	26.194	-72.940	2000 46	15	EF	CC
5707	9/5/98 14:42:49	A	33.419	-106.299	41.136	-144.214	2000 46	15	EF	CC
5707	9/5/98 15:29:19	3	33.416	-106.290	0.074	0.732	2000 46	15	EF	CC
5707	9/5/98 16:17:19	1	33.397	-106.188	33.636	-107.327	2000 46	15	EF	CC
5707	9/5/98 17:54:49	2	33.401	-106.289	43.519	-155.130	2000 46	15	EF	C8
5707	9/5/98 20:01:21	B	33.395	-106.311	42.243	-62.943	2000 46	15	EF	CC
5707	9/6/98 01:08:11	B	33.382	-106.334	39.481	-75.114	2000 FE	27	EF	CC
5707	9/6/98 01:54:41	1	33.418	-106.308	41.974	-64.237	2000 FE	27	EF	CC
5707	9/6/98 02:02:11	2	33.417	-106.291	25.317	-145.662	2000 FE	27	EF	CC
5707	9/6/98 02:46:26	3	33.428	-106.290	30.003	-122.647	2000 FE	27	EF	CC
5707	9/6/98 03:36:41	2	33.431	-106.276	32.110	-112.407	2000 FE	27	EF	CC
5707	9/6/98 08:28:01	A	33.435	-106.299	21.662	-52.357	2000 FE	27	EF	CC
5707	9/6/98 14:21:55	3	33.427	-106.287	39.023	-133.334	2000 64	65	EF	CC
5707	9/6/98 15:06:55	2	33.411	-106.263	-0.492	0.756	2000 64	25	EF	CC
5707	9/6/98 16:03:55	A	33.414	-106.329	32.324	-101.084	2000 64	25	EF	CC
5707	9/6/98 16:44:25	1	33.420	-106.272	44.077	-158.208	2000 64	25	EF	CC
5707	9/6/98 19:53:15	1	33.435	-106.304	43.752	-57.569	2000 64	25	EF	CC
5707	9/6/98 21:27:45	B	33.347	-106.755	33.570	-105.614	2000 3	37	EF	CC
5707	9/7/98 02:26:35	B	33.450	-106.125	32.119	-112.380	2000 0	0	0	0
5707	9/7/98 05:05:26	A	33.459	-106.269	22.911	-154.221	2000 74	37	EF	CC
5707	9/7/98 09:56:28	3	33.427	-106.311	30.946	-95.040	2000 70	27	EF	CC
5707	9/7/98 15:52:00	1	33.428	-106.311	31.072	-95.157	2000 0	0	0	0
5707	9/7/98 16:25:23	1	33.415	-106.297	41.650	-147.227	2000 0	0	0	0
5707	9/7/98 17:28:25	A	33.407	-106.298	41.205	-142.966	2000 0	0	0	0
5707	9/7/98 21:17:17	1	33.404	-106.337	34.658	-100.316	2000 8A	33	EF	CC
5707	9/8/98 03:11:08	B	33.421	-106.328	34.709	-100.262	2000 0	0	0	0
5707	9/8/98 03:42:15	2	33.432	-106.304	24.456	-149.385	2000 0	0	0	0
5707	9/8/98 04:51:01	2	33.432	-106.298	24.366	-148.274	2000 54	27	EF	CC
5707	9/8/98 09:47:16	3	33.427	-106.315	29.813	-89.555	2000 54	27	EF	CC
5707	9/8/98 17:17:00	A	33.422	-106.307	40.091	-136.805	2000 0	0	0	0
5707	9/8/98 21:07:40	2	33.411	-106.332	35.763	-95.188	2000 0	0	0	0
5707	9/8/98 22:46:18	A	33.416	-106.285	25.587	-143.058	2000 0	0	0	0
5707	9/8/98 23:16:48	1	33.414	-106.321	41.381	-66.200	2000 0	0	0	0
5707	9/9/98 09:37:46	3	33.419	-106.322	28.782	-84.374	2000 10	37	EF	CC
5707	9/9/98 11:14:31	3	33.415	-106.306	38.964	-132.184	2000 10	37	EF	CC
5707	9/9/98 13:15:54	3	33.425	-106.331	32.494	-101.882	2000 10	37	EF	CC
5707	9/9/98 20:59:45	2	33.408	-106.322	36.965	-89.819	2000 0	0	0	0
5707	9/9/98 22:37:39	2	33.410	-106.306	26.636	-137.814	2000 0	0	0	0
5707	9/9/98 22:54:42	B	33.413	-106.328	43.189	-55.500	2000 0	0	0	0

5707	9/10/98 00:34:50	2	33.399	-106.373	33.992	-103.501	2000 0	0	0	0
5707	9/10/98 01:19:12	A	33.410	-106.320	38.667	-80.476	2000 0	0	0	0
5707	9/10/98 02:47:20	3	33.407	-106.326	37.333	-88.495	2000 0	0	0	0
5707	9/10/98 02:56:13	3	33.413	-106.306	28.917	-128.251	2000 0	0	0	0
5707	9/10/98 04:28:04	B	33.412	-106.304	26.989	-136.221	2000 0	0	0	0
5707	9/10/98 09:24:24	2	33.425	-106.325	27.329	-78.835	2000 AF	27	EF	CC
5707	9/10/98 11:01:09	B	33.256	-106.070	38.084	-126.163	2000 AF	27	EF	CC
5707	9/10/98 13:39:04	1	33.430	-106.311	25.172	-67.880	2000 AF	27	EF	CC
5707	9/10/98 20:48:10	3	33.418	-106.333	38.059	-84.582	2000 0	20	0	0
5707	9/10/98 22:26:40	0	33.414	-106.338	27.781	-132.451	2000 0	0	0	0
5707	9/11/98 00:14:48	2	33.408	-106.326	36.200	-92.832	2000 0	0	0	0
5707	9/11/98 00:57:01	A	33.415	-106.322	41.118	-70.464	2000 0	0	0	0
5707	9/11/98 01:51:50	A	33.409	-106.303	26.287	-140.888	2000 0	0	0	0
5707	9/11/98 02:33:18	3	33.406	-106.320	38.419	-82.335	2000 0	0	0	0
5707	9/11/98 02:37:00	3	33.410	-106.294	30.845	-117.949	2000 0	0	0	0
5707	9/11/98 04:13:17	A	33.410	-106.305	28.288	-130.186	2000 0	0	0	0
5707	9/11/98 09:13:15	3	33.412	-106.313	26.311	-73.606	2000 0	0	0	0
5707	9/11/98 10:54:07	2	33.402	-106.317	36.642	-121.336	2000 0	0	0	0
5707	9/11/98 12:32:04	3	33.403	-106.328	28.043	-80.650	2000 5D	37	EF	CB
5707	9/11/98 13:18:34	A	33.401	-106.326	23.117	-57.376	2000 5D	37	EF	CB
5707	9/11/98 18:19:49	B	33.526	-106.223	45.736	-167.318	2000 0	0	0	0
5707	9/11/98 20:36:06	3	33.400	-106.325	39.198	-79.333	2000 0	0	0	0
5707	9/11/98 22:16:05	B	33.402	-106.304	28.985	-127.001	2000 0	0	0	0
5707	9/11/98 23:53:07	A	33.402	-106.326	38.377	-82.360	2000 0	0	0	0
5707	9/12/98 00:33:06	B	33.404	-106.321	42.641	-59.325	2000 0	0	0	0
5707	9/12/98 01:29:24	3	33.398	-106.313	28.428	-130.478	2000 0	0	0	0
5707	9/12/98 02:13:50	0	33.433	-106.158	1.131	5.029	2000 0	0	0	0
5707	9/12/98 02:21:59	B	33.402	-106.331	39.658	-76.193	2000 0	0	0	0
5707	9/12/98 03:53:04	B	33.409	-106.331	23.423	-154.947	2000 0	0	0	0
5707	9/12/98 04:01:13	3	33.401	-106.313	29.430	-124.338	2000 0	0	0	0
5707	9/12/98 08:59:56	0	33.407	-106.330	24.963	-68.489	2000 66	27	EF	CC
5707	9/12/98 10:42:40	0	33.393	-106.256	35.493	-116.214	2000 60	27	EF	CC
5707	9/12/98 12:08:55	2	33.407	-106.324	25.769	-70.464	2000 60	27	EF	CC
5707	9/12/98 13:48:14	3	33.404	-106.309	35.896	-118.246	2000 66	23	EF	CB
5707	9/12/98 14:35:29	1	33.409	-106.319	30.964	-94.596	2000 66	23	EF	CB
5707	9/12/98 14:48:14	A	33.406	-106.308	24.471	-64.948	2000 66	23	EF	CB
5707	9/12/98 20:28:48	A	33.401	-106.328	40.477	-73.207	2000 0	0	0	0
5707	9/12/98 22:05:06	3	33.413	-106.302	29.979	-121.836	2000 0	0	0	0
5707	9/12/98 23:27:18	A	33.408	-106.319	40.153	-71.899	2000 0	0	0	0
5707	9/13/98 00:11:45	B	33.411	-106.327	44.604	-48.560	2000 B3	33	26	66
5707	9/13/98 01:08:02	2	33.412	-106.298	30.595	-119.881	2000 0	0	0	0
5707	9/13/98 01:52:28	2	33.404	-106.341	35.354	-97.056	2000 0	0	0	0
5707	9/13/98 03:48:45	3	33.413	-106.304	30.902	-118.157	2000 0	0	0	0
5707	9/13/98 10:30:12	2	33.417	-106.291	34.431	-110.989	2000 6B	27	EF	CB
5707	9/13/98 11:45:57	B	33.439	-106.342	23.692	-59.236	2000 6B	27	EF	CB
5707	9/13/98 13:29:49	0	33.409	-106.255	0.657	-2.211	2000 6B	27	EF	CB
5707	9/13/98 14:11:49	3	33.427	-106.315	28.697	-84.333	2000 6B	27	EF	CB
5707	9/13/98 14:33:34	1	33.429	-106.299	22.993	-59.074	2000 42	37	EF	CC
5707	9/13/98 20:16:19	B	33.418	-106.133	41.206	-69.034	2000 0	0	0	0
5707	9/13/98 21:52:37	2	33.427	-106.294	31.283	-116.403	2000 0	0	0	0
5707	9/13/98 23:03:04	B	33.440	-106.255	42.087	-61.517	2000 0	0	0	0
5707	9/14/98 00:46:54	2	33.435	-106.252	32.793	-109.472	2000 0	0	0	0
5707	9/14/98 01:29:55	2	33.421	-106.323	37.471	-86.269	2000 0	0	0	0
5707	9/14/98 01:55:53	A	33.427	-106.323	42.136	-64.201	2000 0	0	0	0
5707	9/14/98 03:11:32	3	33.432	-106.304	27.572	-134.048	2000 0	0	0	0
5707	9/14/98 03:36:45	3	33.437	-106.284	32.178	-112.192	2000 0	0	0	0
5707	9/14/98 08:39:18	B	33.376	-106.328	23.016	-57.550	2000 0	0	0	0
5707	9/14/98 10:21:31	A	33.464	-106.503	33.237	-105.432	2000 0	0	0	1
5707	9/14/98 11:57:48	B	33.437	-106.428	43.212	-152.863	2000 0	0	0	0

5707	9/14/98 13:07:32	1	33.423	-106.349	31.457	-97.004	2000	0	0	0	0
5707	9/14/98 13:50:33	1	33.423	-106.307	26.436	-73.696	2000	0	0	0	0
5707	9/14/98 14:47:39	1	33.411	-106.313	40.933	-145.075	2000	0	0	0	0
5707	9/14/98 15:32:54	3	33.410	-106.307	36.475	-121.429	2000	0	0	0	0
5707	9/14/98 16:01:49	1	33.416	-106.339	32.224	-100.798	2000	0	0	0	0
5707	9/15/98 00:27:20	0	33.405	-106.335	34.933	-99.830	2000	0	0	0	0
5707	9/15/98 01:08:49	2	33.407	-106.323	39.601	-75.901	2000	0	0	0	0
5707	9/15/98 01:45:50	A	33.408	-106.323	43.641	-57.974	2000	0	0	0	0
5707	9/15/98 02:04:21	A	33.415	-106.314	25.006	-146.684	2000	0	0	0	40
5707	9/15/98 02:48:48	3	33.415	-106.307	29.789	-123.688	2000	0	0	0	0
5707	9/15/98 03:24:21	0	33.343	-106.657	33.508	-105.869	2000	0	40	0	0
5707	9/15/98 05:05:49	A	33.415	-106.315	22.977	-154.005	2000	0	0	0	0
5707	9/15/98 10:11:42	2	33.419	-106.345	32.127	-100.192	2000	0	0	0	0
5707	9/15/98 11:50:56	A	33.410	-106.308	42.048	-148.273	2000	0	0	0	0
5707	9/15/98 12:44:16	2	33.411	-106.327	29.277	-86.514	2000	0	0	0	0
5707	9/15/98 13:27:58	A	33.407	-106.320	24.108	-63.368	2000	4A	10	4	A0
5707	9/15/98 14:24:59	2	33.409	-106.305	39.014	-134.338	2000	0	0	0	0
5707	9/15/98 15:10:55	2	33.400	-106.274	34.363	-110.919	2000	0	0	0	0
5707	9/15/98 15:49:26	3	33.414	-106.326	30.931	-94.805	2000	0	0	0	0
5707	9/15/98 16:48:40	1	33.410	-106.310	43.929	-158.852	2000	0	0	0	0
5707	9/15/98 19:51:37	B	33.330	-106.290	43.227	-57.452	2000	0	0	0	0
5707	9/15/98 21:31:26	0	33.368	-106.514	33.574	-105.562	2000	0	0	0	0
5707	9/15/98 23:12:18	1	33.418	-106.320	23.187	-153.712	2000	0	0	8	0
5707	9/16/98 00:03:28	1	33.421	-106.319	37.139	-88.321	2000	0	0	0	0
5707	9/16/98 00:46:29	0	33.423	-106.302	41.611	-65.236	2000	0	0	0	0
5707	9/16/98 01:31:44	A	33.420	-106.318	44.409	-51.853	2000	0	0	0	0
5707	9/16/98 01:40:38	3	33.411	-106.317	27.386	-136.112	2000	0	0	0	0
5707	9/16/98 02:24:28	2	33.413	-106.295	32.052	-112.962	2000	0	0	0	0
5707	9/16/98 03:11:12	2	33.405	-106.337	34.730	-100.098	2000	10	0	1	20
5707	9/16/98 09:57:40	A	33.411	-106.330	30.926	-94.997	2000	0	0	0	0
5707	9/16/98 12:22:49	0	33.407	-106.333	26.988	-75.911	2000	0	0	0	0
5707	9/16/98 13:07:21	1	33.419	-106.318	22.051	-52.639	2000	C5	37	EF	CC
5707	9/16/98 14:00:36	1	33.426	-106.321	36.996	-123.817	2000	C5	37	EF	CC
5707	9/16/98 14:46:21	0	33.435	-106.348	32.197	-100.382	2000	C5	37	EF	CC
5707	9/16/98 15:37:21	B	33.564	-106.351	29.817	-88.700	2000	C5	37	EF	CC
5707	9/16/98 16:27:36	1	33.433	-106.340	41.810	-148.191	2000	C5	37	EF	CC
5707	9/16/98 17:19:21	2	33.438	-106.318	39.723	-136.828	2000	C5	37	EF	CC
5707	9/16/98 19:40:57	B	33.257	-106.234	44.166	-52.061	2000	0	0	0	0
5707	9/16/98 21:23:54	2	33.432	-106.360	34.767	-100.191	2000	0	0	0	10
5707	9/16/98 23:02:25	A	33.441	-106.324	24.131	-148.362	2000	0	0	0	0
5707	9/16/98 23:38:42	A	33.433	-106.342	39.031	-77.670	2000	0	0	0	0
5707	9/17/98 00:23:53	B	33.507	-106.308	43.630	-54.482	2000	0	0	0	0
5707	9/17/98 01:15:44	B	33.311	-106.629	29.578	-125.512	2000	0	0	0	0
5707	9/17/98 02:04:37	1	33.425	-106.375	34.220	-102.595	2000	0	0	0	0
5707	9/17/98 03:00:09	3	33.432	-106.343	36.058	-94.217	2000	0	0	0	0
5707	9/17/98 09:50:28	A	33.442	-106.351	29.894	-89.586	2000	0	0	0	0
5707	9/17/98 11:27:29	A	33.440	-106.330	40.034	-137.520	2000	0	0	0	0
5707	9/17/98 12:00:49	2	33.439	-106.339	24.930	-65.398	2000	0	0	0	0
5707	9/17/98 13:40:13	1	33.438	-106.318	34.866	-113.332	2000	48	37	EF	CB
5707	9/17/98 14:22:58	1	33.454	-106.341	29.946	-90.040	2000	48	37	EF	CB
5707	9/17/98 15:19:13	A	33.444	-106.337	44.280	-161.484	2000	48	37	EF	CB
5707	9/17/98 15:24:28	3	33.450	-106.339	28.245	-82.705	2000	48	37	EF	CB
5707	9/17/98 16:05:43	B	33.497	-106.317	39.782	-137.709	2000	48	37	EF	CB
5707	9/17/98 17:04:13	3	33.448	-106.325	38.667	-130.679	2000	48	37	EF	CB
5707	9/18/98 01:42:28	A	33.448	-106.347	36.166	-92.144	2000	0	0	0	0
5707	9/18/98 02:45:26	3	33.450	-106.343	37.266	-88.051	2000	0	0	0	0
5707	9/18/98 03:24:41	A	33.465	-106.316	26.333	-139.553	2000	0	3F	FF	FF
5707	9/18/98 04:24:40	B	33.447	-106.340	27.126	-136.033	2000	0	0	0	0
5707	9/18/98 09:36:29	3	33.452	-106.344	28.681	-84.204	2000	0	0	0	0

5707	9/18/98 13:18:31	2	33.459	-106.365	-0.001	1.383	2000 7	37	EF	CB
5707	9/18/98 14:02:01	1	33.459	-106.324	27.694	-79.437	2000 7	37	EF	CB
5707	9/18/98 14:57:31	A	33.468	-106.318	42.253	-150.764	2000 17	37	EF	CB
5707	9/18/98 15:14:01	B	33.420	-106.366	27.077	-76.712	2000 7	37	EF	CB
5707	9/18/98 15:41:46	A	33.454	-106.313	37.832	-127.322	2000 7	37	EF	CB
5707	9/18/98 16:52:16	3	33.456	-106.317	37.391	-124.666	2000 7	37	EF	CB
5707	9/19/98 00:36:40	1	33.443	-106.430	33.854	-104.420	2000 34	25	EF	CB
5707	9/19/98 01:20:55	2	33.461	-106.352	38.395	-81.683	2000 34	25	EF	CB
5707	9/19/98 02:17:55	B	33.466	-106.335	23.948	-152.774	2000 34	25	EF	CB
5707	9/19/98 02:35:10	2	33.461	-106.349	38.691	-82.228	2000 34	25	EF	CB
5707	9/19/98 03:00:40	3	33.464	-106.334	28.662	-129.303	2000 34	25	EF	CB
5707	9/19/98 04:13:25	3	33.465	-106.336	28.444	-129.969	2000 34	25	EF	CB
5707	9/19/98 12:53:19	1	33.439	-106.317	30.564	-92.574	2000 6D	27	EF	CB
5707	9/19/98 13:42:04	1	33.453	-106.320	25.497	-68.752	2000 6D	27	EF	CB
5707	9/19/98 14:37:34	0	33.463	-106.330	40.144	-140.122	2000 6D	27	EF	CB
5707	9/19/98 14:59:19	2	33.453	-106.327	25.434	-70.745	2000 6D	27	EF	CB
5707	9/19/98 15:22:34	2	33.447	-106.304	35.544	-116.565	2000 6D	27	EF	CB
5707	9/19/98 16:41:19	A	33.448	-106.315	36.209	-118.287	2000 6D	27	EF	CB
5707	9/20/98 00:58:37	A	33.435	-106.332	40.472	-70.874	2000 20	0	1	0
5707	9/20/98 01:56:24	2	33.454	-106.321	25.922	-141.626	2000 1E	35	ED	CB
5707	9/20/98 02:21:54	A	33.445	-106.330	39.590	-76.252	2000 1E	35	EF	CB
5707	9/20/98 02:36:54	3	33.456	-106.315	30.908	-118.738	2000 1E	35	EF	CB
5707	9/20/98 04:03:54	3	33.455	-106.319	29.596	-123.899	2000 1E	35	EF	CB
5707	9/21/98 09:05:33	1	33.422	-106.301	25.353	-68.318	2000 32	39	EF	CC
5707	9/21/98 10:41:33	3	33.421	-106.277	35.539	-116.148	2000 1E	35	EF	CB
5707	9/21/98 12:11:33	1	33.417	-106.308	26.006	-71.293	2000 55	37	EF	CC
5707	9/21/98 13:51:52	A	33.573	-106.417	36.418	-118.554	2000 15	37	EF	CC
5707	9/21/98 14:39:40	3	33.436	-106.314	31.254	-95.669	2000 15	37	EF	CC
5707	9/22/98 14:12:04	A	33.436	-106.342	29.031	-85.510	2000 15	37	EF	CC
5707	9/22/98 15:09:26	A	33.446	-106.295	43.334	-156.681	2000 15	37	EF	CC
5707	9/22/98 15:54:26	3	33.435	-106.294	38.919	-132.776	2000 55	37	EF	CC
5707	9/22/98 16:04:11	1	33.433	-106.329	32.071	-100.370	2000 DB	27	EF	CC
5707	9/22/98 17:41:41	B	33.446	-106.200	42.206	-148.499	2000 55	37	EF	CC
5707	9/22/98 21:55:14	3	33.421	-106.281	31.254	-116.364	2000 15	37	EF	CC
5707	9/23/98 21:45:31	1	33.430	-106.275	32.380	-111.049	2000 32	39	EF	CC
5707	9/23/98 22:47:46	A	33.410	-106.270	44.325	-51.587	2000 32	39	EF	CC
5707	9/24/98 00:26:46	2	33.437	-106.337	34.777	-99.800	2000 32	39	EF	CC
5707	9/24/98 01:11:01	B	33.448	-106.332	39.386	-76.663	2000 66	17	EF	CC
5707	9/24/98 01:32:01	B	33.470	-106.318	44.496	-51.607	2000 1E	35	EF	CB
5707	9/24/98 02:05:46	A	33.450	-106.326	24.846	-147.686	2000 15	37	EF	CC
5707	9/24/98 02:48:31	3	33.447	-106.326	29.747	-124.408	2000 15	37	EF	CC
5707	9/24/98 03:12:34	0	33.437	-106.366	34.830	-99.856	2000 DB	27	EF	CC
5707	9/25/98 04:41:16	A	33.429	-106.340	25.727	-141.802	2000 F3	37	EF	CB
5707	9/25/98 09:58:24	2	33.450	-106.344	30.941	-94.775	2000 DB	27	EF	CC
5707	9/26/98 11:30:10	A	33.447	-106.321	39.862	-137.480	2000 78	45	EF	CB
5707	9/26/98 14:24:55	1	33.444	-106.326	30.166	-90.955	2000 AD	27	EF	CB
5707	9/26/98 15:15:10	A	33.419	-106.326	27.114	-76.633	2000 78	45	EF	CB
5707	9/26/98 16:05:25	B	33.434	-106.163	40.022	-138.459	2000 DF	27	EF	5
5707	9/26/98 16:54:25	2	33.431	-106.298	37.225	-124.402	2000 78	45	EF	CB
5707	9/27/98 09:40:34	B	33.475	-106.419	28.743	-83.840	2000 0	0	0	0
5707	9/27/98 11:16:51	1	33.455	-106.314	38.914	-132.066	2000 0	0	0	0
5707	9/27/98 16:38:06	B	33.280	-105.643	36.022	-118.220	2000 0	0	0	0
5707	9/27/98 21:01:24	B	33.469	-106.103	36.918	-90.080	2000 0	0	0	0
5707	9/27/98 22:38:38	A	33.438	-106.323	26.804	-137.570	2000 0	0	0	0
5707	9/28/98 04:06:34	B	33.384	-106.032	28.927	-124.512	2000 0	0	0	0
5707	9/28/98 12:58:20	B	33.382	-106.412	30.732	-93.373	2000 0	0	0	0
5707	9/28/98 13:42:02	A	33.444	-106.320	25.586	-69.951	2000 0	40	20	0
5707	9/28/98 15:24:59	B	33.555	-106.440	35.808	-117.373	2000 0	0	0	0
5707	9/28/98 20:47:10	A	33.438	-106.324	38.006	-84.155	2000 0	0	0	0

5707	9/30/98	10:45:23	B	32.888	-106.141	35.057	-116.349	2000	0	2	0	0
5707	10/1/98	17:33:16	A	33.376	-106.290	40.783	-142.512	2000	0	0	0	0
5707	10/1/98	21:58:25	B	33.375	-106.311	31.028	-116.762	2000	0	0	0	4
5707	10/2/98	03:18:22	B	33.370	-106.248	26.688	-136.515	2000	0	0	0	0
5707	10/4/98	02:33:30	B	33.385	-106.229	31.433	-115.398	2000	0	0	24	80
5707	10/4/98	21:22:13	B	33.381	-106.339	34.704	-100.071	2000	0	0	0	0
5736	5/15/98	03:51:05	3	33.361	-106.619	29.123	-126.183	1000	7E	37	EF	C4
5736	5/15/98	09:20:47	2	33.353	-106.604	28.226	-83.375	1000	7E	37	EF	C4
5736	5/16/98	09:10:30	B	33.296	-106.521	27.132	-77.945	1000	67	27	EF	C4
5736	5/16/98	10:53:00	3	33.351	-106.621	37.333	-125.740	1000	67	27	EF	C4
5736	5/16/98	12:29:00	A	33.330	-106.611	27.060	-77.060	1000	4A	37	EF	C5
5736	5/16/98	12:32:00	B	33.366	-106.597	46.775	-174.543	1000	91	35	EF	C5
5736	5/16/98	14:13:14	A	33.344	-106.625	36.936	-124.398	1000	70	37	EF	C4
5736	5/16/98	16:04:17	0	33.355	-106.680	33.830	-108.882	1000	67	27	EF	C4
5736	5/17/98	15:50:09	1	33.318	-106.557	32.556	-103.112	1000	91	35	EF	C5
5736	5/17/98	17:30:25	A	33.351	-106.643	42.895	-151.148	1000	D6	37	EF	C4
5736	5/17/98	20:22:09	B	33.354	-106.638	39.293	-78.010	1000	91	35	EF	C5
5736	5/17/98	22:01:53	0	33.368	-106.700	29.338	-125.827	1000	D6	37	EF	C4
5736	5/17/98	23:28:07	1	33.356	-106.637	41.102	-67.847	1000	92	29	EF	C4
5736	5/18/98	23:07:24	A	33.349	-106.619	43.195	-57.081	1000	2E	27	EF	C4
5736	5/19/98	00:44:54	A	33.378	-106.545	33.631	-105.210	1000	46	29	EF	C4
5736	5/19/98	01:21:39	B	33.389	-106.637	44.057	-53.923	1000	DE	25	EF	C4
5736	5/19/98	02:27:39	2	33.361	-106.643	23.520	-152.773	1000	30	17	EF	C4
5736	5/19/98	03:02:09	1	33.365	-106.605	0.150	1.598	1000	6B	29	EF	C4
5736	5/19/98	04:45:26	B	33.337	-106.712	23.742	-150.449	1000	30	17	EF	C4
5736	5/20/98	10:07:26	0	33.337	-106.535	32.952	-104.734	1000	30	17	EF	C4
5736	5/20/98	11:47:27	A	33.373	-106.620	43.107	-152.897	1000	C1	39	EF	C4
5736	5/21/98	11:39:18	0	33.304	-106.617	41.654	-147.453	1000	AE	45	EF	C4
5736	5/21/98	12:22:03	A	33.358	-106.615	26.132	-71.930	1000	E7	27	EF	C4
5736	5/21/98	14:01:03	3	33.358	-106.623	36.070	-119.833	1000	E9	35	EF	C4
5736	5/21/98	15:04:48	B	33.354	-106.737	27.375	-78.803	1000	97	27	EF	C4
5736	5/21/98	16:40:48	2	33.356	-106.626	37.762	-126.963	1000	4C	37	EF	C4
5736	5/22/98	18:11:31	B	33.283	-106.371	45.891	-169.586	1000	E2	27	EF	C4
5736	5/22/98	19:30:16	A	33.357	-106.599	44.882	-51.105	1000	9C	29	EF	C4
5736	5/22/98	21:08:31	3	33.362	-106.599	34.874	-99.534	1000	FD	27	EF	C4
5736	5/22/98	22:49:46	1	33.353	-106.620	24.443	-147.475	1000	FD	27	EF	C4
5736	5/22/98	23:17:31	A	33.340	-106.618	41.826	-62.929	1000	FD	27	EF	C4
5736	5/23/98	00:56:46	3	33.350	-106.647	32.502	-110.847	1000	6A	27	EF	C4
5736	5/24/98	00:39:09	B	33.315	-106.698	34.676	-101.154	1000	6A	27	EF	C4
5736	5/24/98	01:57:25	B	33.386	-106.574	40.490	-72.172	1000	D7	27	EF	C4
5736	5/24/98	02:16:10	1	33.362	-106.638	24.657	-148.278	1000	D7	27	EF	C4
5736	5/24/98	03:41:40	3	33.357	-106.634	30.418	-119.887	1000	B0	27	EF	C4
5736	5/25/98	09:12:45	3	33.356	-106.622	27.119	-78.073	1000	B2	29	EF	C4
5736	5/25/98	10:53:15	A	33.362	-106.629	37.514	-126.130	1000	B0	27	EF	C4
5736	5/25/98	12:34:30	1	33.356	-106.623	27.413	-77.739	1000	B0	27	EF	C4
5736	5/25/98	14:14:02	3	33.355	-106.632	37.217	-125.535	1000	68	29	EF	C4
5736	5/26/98	13:51:28	B	33.340	-106.653	34.936	-114.978	1000	43	37	EF	C4
5736	5/26/98	15:38:59	2	33.349	-106.602	31.202	-96.855	1000	FF	29	EF	C4
5736	5/26/98	17:19:29	A	33.355	-106.610	41.533	-144.892	1000	CB	37	EF	C4
5736	5/27/98	21:55:54	3	33.354	-106.631	30.247	-120.831	1000	AC	47	EF	C5
5736	5/27/98	23:08:39	B	33.359	-106.621	42.678	-58.330	1000	D2	27	EF	C4
5736	5/28/98	02:28:54	1	33.353	-106.628	23.343	-154.054	1000	CB	37	EF	C4
5736	5/28/98	02:52:33	3	33.356	-106.616	35.685	-95.905	1000	3	25	EF	C5
5736	5/28/98	04:30:48	3	33.352	-106.623	25.224	-143.939	1000	69	27	EF	C4
5736	5/29/98	04:20:00	3	33.362	-106.637	26.422	-137.848	1000	DE	29	EF	C4
5736	5/29/98	08:28:15	B	33.416	-106.644	22.868	-56.550	1000	70	35	EF	C5
5736	5/29/98	10:09:46	1	33.335	-106.531	32.983	-104.892	1000	35	39	EF	C4
5736	5/30/98	09:55:45	1	33.356	-106.618	31.847	-99.697	1000	EC	39	EF	C4
5736	5/30/98	09:55:45	1	33.356	-106.618	31.847	-99.697	1000	EC	39	EF	C4

5736	5/30/98	11:39:14	1	33.357	-106.633	41.823	-147.479	1000	C5	45	EF	C4
5736	5/30/98	11:39:14	1	33.357	-106.633	41.823	-147.479	1000	C5	45	EF	C4
5736	5/30/98	13:59:29	B	33.599	-106.890	36.998	-119.169	1000	35	39	EF	C4
5736	5/30/98	13:59:29	B	33.599	-106.890	36.998	-119.169	1000	35	39	EF	C4
5736	5/31/98	17:58:03	A	33.373	-106.645	45.038	-162.900	1000	CC	27	EF	C4
5736	5/31/98	17:58:03	A	33.373	-106.645	45.038	-162.900	1000	CC	27	EF	C4
5736	5/31/98	21:10:02	3	33.363	-106.622	34.860	-99.589	1000	F7	27	EF	C5
5736	5/31/98	22:51:29	2	33.360	-106.637	24.386	-147.529	1000	CC	27	EF	C4
5736	6/2/98	00:38:35	1	33.362	-106.610	34.378	-101.606	1000	30	37	EF	C4
5736	6/2/98	01:49:05	1	33.359	-106.625	41.967	-65.939	1000	80	37	EF	C4
5736	6/2/98	02:19:05	2	33.352	-106.630	24.279	-149.320	1000	6B	27	EF	C4
5736	6/2/98	03:27:20	1	33.356	-106.630	31.814	-113.858	1000	F2	37	EF	C5
5736	6/3/98	09:15:35	3	33.359	-106.621	27.254	-78.180	1000	2A	27	EF	C4
5736	6/3/98	10:55:20	3	33.361	-106.633	37.515	-126.034	1000	5E	29	EF	C4
5736	6/3/98	12:36:06	2	33.357	-106.619	27.608	-78.927	1000	F8	37	EF	C4
5736	6/4/98	12:11:29	B	33.368	-106.617	25.306	-68.031	1000	E4	37	EF	C4
5736	6/4/98	13:54:14	2	33.359	-106.646	35.364	-116.164	1000	79	37	EF	44
5736	6/4/98	15:30:14	3	33.356	-106.631	29.941	-90.620	1000	5D	27	EF	C4
5736	6/4/98	17:08:29	3	33.361	-106.643	40.159	-138.484	1000	B7	27	EF	C4
5736	6/5/98	20:14:03	3	33.363	-106.635	40.336	-73.071	1000	14	37	EF	C4
5736	6/5/98	21:54:33	2	33.359	-106.648	30.322	-120.976	1000	54	39	EF	C4
5736	6/6/98	00:48:56	0	33.394	-106.369	33.128	-107.656	1000	CE	27	EF	C4
5736	6/6/98	02:29:50	A	33.396	-106.636	23.316	-155.363	1000	14	37	EF	C4
5736	6/6/98	02:39:35	3	33.365	-106.635	37.048	-89.969	1000	54	39	EF	C4
5736	6/7/98	02:08:41	2	33.359	-106.637	25.316	-144.742	1000	53	27	EF	C4
5736	6/7/98	02:08:41	2	33.359	-106.637	25.316	-144.742	1000	53	27	EF	C4
5736	6/7/98	02:25:56	2	33.357	-106.624	38.132	-83.997	1000	77	29	EF	C4
5736	6/7/98	02:25:56	2	33.357	-106.624	38.132	-83.997	1000	77	29	EF	C4
5736	6/7/98	04:05:41	3	33.358	-106.635	27.957	-131.770	1000	9C	27	EF	C4
5736	6/7/98	04:05:41	3	33.358	-106.635	27.957	-131.770	1000	9C	27	EF	C4
5736	6/7/98	08:29:12	B	33.386	-106.632	22.809	-56.829	1000	14	37	EF	C4
5736	6/7/98	08:29:12	B	33.386	-106.632	22.809	-56.829	1000	14	37	EF	C4
5736	6/8/98	10:00:24	2	33.354	-106.606	31.842	-99.608	1000	B5	25	EF	C4
5736	6/8/98	11:40:09	2	33.364	-106.630	41.800	-147.518	1000	53	27	EF	C4
5736	6/8/98	12:25:54	1	33.356	-106.623	26.613	-74.253	1000	77	29	EF	C4
5736	6/8/98	14:06:00	0	33.352	-106.635	36.514	-122.046	1000	EE	37	F0	3D
5736	6/8/98	14:38:15	2	33.343	-106.606	24.532	-66.729	1000	93	27	EF	C4
5736	6/9/98	14:24:59	B	33.458	-106.663	23.508	-60.314	1000	92	37	EF	C5
5736	6/9/98	15:24:44	A	33.350	-106.618	43.563	-159.849	1000	92	37	EF	C5
5736	6/9/98	16:06:44	1	33.363	-106.655	33.761	-108.520	1000	EE	37	F0	3D
5736	6/9/98	17:46:29	0	33.348	-106.636	43.811	-156.639	1000	8D	FC	7	E0
5736	6/9/98	21:12:43	1	33.362	-106.599	34.860	-99.714	1000	92	37	EF	C5
5736	6/10/98	20:56:52	1	33.357	-106.611	35.925	-94.237	1000	76	37	EF	C4
5736	6/10/98	22:43:38	1	33.359	-106.620	25.448	-142.015	1000	8D	37	EF	C4
5736	6/11/98	00:42:08	2	33.358	-106.597	34.181	-102.608	1000	88	39	EF	C4
5736	6/11/98	01:36:53	2	33.362	-106.621	0.127	-0.651	1000	76	37	EF	C4
5736	6/11/98	02:19:38	2	33.355	-106.632	24.198	-150.612	1000	E9	25	EF	C4
5736	6/11/98	04:58:28	A	33.352	-106.628	22.466	-155.499	1000	76	37	EF	C4
5736	6/12/98	04:45:03	1	33.349	-106.618	23.921	-149.634	1000	AD	39	EF	C4
5736	6/12/98	09:15:03	3	33.360	-106.624	27.191	-78.360	1000	88	39	EF	C4
5736	6/12/98	10:54:33	3	33.361	-106.638	37.595	-126.318	1000	6A	39	EF	C4
5736	6/13/98	10:43:15	3	33.356	-106.634	36.466	-120.959	1000	B0	25	EF	C4
5736	6/13/98	12:14:44	2	33.355	-106.618	25.528	-69.611	1000	44	37	EF	C4
5736	6/13/98	12:24:29	B	33.370	-106.616	45.872	-169.468	1000	A8	27	EF	C4
5736	6/13/98	13:55:14	A	33.353	-106.625	35.649	-117.489	1000	45	29	EF	C4
5736	6/13/98	15:19:14	1	33.356	-106.617	28.672	-84.614	1000	A8	27	EF	C4
5736	6/13/98	15:36:29	B	33.273	-106.600	44.570	-165.871	1000	45	29	EF	C4
5736	6/13/98	16:57:30	3	33.357	-106.620	38.750	-132.128	1000	0B	37	EF	C4
5736	6/14/98	16:45:09	0	33.360	-106.606	37.598	-126.287	1000	B0	25	EF	C4

5736	6/14/98	20:16:32	A	33.356	-106.621	40.331	-73.166	1000 A4	29	EF	C5
5736	6/14/98	21:56:17	3	33.354	-106.629	30.239	-121.086	1000 A4	29	EF	C5
5736	6/14/98	23:12:23	A	33.367	-106.639	42.485	-60.625	1000 ED	19	EF	C4
5736	6/15/98	00:49:08	A	33.360	-106.618	32.996	-108.438	1000 DB	37	EF	C4
5736	6/16/98	00:29:44	3	33.356	-106.606	35.098	-98.122	1000 7F	29	EF	C4
5736	6/16/98	02:10:59	A	33.356	-106.623	25.073	-145.712	1000 F3	37	EF	C4
5736	6/16/98	02:13:14	1	33.357	-106.605	39.353	-77.800	1000 7F	29	EF	C4
5736	6/16/98	03:54:28	3	33.356	-106.622	29.250	-125.696	1000 DF	19	EF	C4
5736	6/17/98	09:59:33	3	33.353	-106.606	31.859	-99.811	1000 D6	37	EF	C4
5736	6/17/98	11:42:17	0	33.353	-106.630	41.804	-147.731	1000 D6	37	EF	C4
5736	6/17/98	12:27:19	2	33.350	-106.618	26.870	-75.546	1000 7F	29	EF	C4
5736	6/18/98	13:46:03	1	33.358	-106.640	34.606	-112.765	1000 1F	29	EF	C4
5736	6/18/98	14:14:33	A	33.392	-106.623	21.971	-54.564	1000 20	37	EF	C4
5736	6/18/98	15:53:33	2	33.350	-106.606	32.462	-102.589	1000 A5	37	EF	C4
5736	6/18/98	17:36:18	2	33.359	-106.631	42.403	-150.303	1000 1F	29	EF	C4
5736	6/19/98	21:01:49	3	33.350	-106.602	35.954	-94.506	1000 57	29	FB	C4
5736	6/19/98	22:43:04	2	33.348	-106.614	25.461	-142.509	1000 1F	29	EF	C4
5736	6/19/98	23:04:04	1	33.356	-106.614	43.649	-55.744	1000 EF	47	EF	C4
5736	6/20/98	00:42:19	1	33.358	-106.571	33.891	-103.971	1000 F1	47	EF	C4
5736	6/20/98	01:26:50	0	33.363	-106.592	44.599	-53.362	1000 2E	19	EF	C5
5736	6/20/98	02:21:35	1	33.342	-106.624	23.894	-151.763	1000 1F	29	EF	C4
5736	6/20/98	03:05:50	1	33.357	-106.567	34.354	-101.807	1000 F1	47	EF	C4
5736	6/21/98	02:01:20	1	33.360	-106.635	26.043	-141.040	1000 A0	37	EF	C4
5736	6/21/98	02:52:20	3	33.355	-106.604	-0.158	0.851	1000 2E	19	EF	C5
5736	6/21/98	04:33:35	1	33.354	-106.619	25.237	-143.520	1000 F1	47	EF	C4
5736	6/21/98	09:15:15	2	33.352	-106.607	27.184	-78.561	1000 2E	19	EF	C5
5736	6/22/98	09:06:01	3	33.361	-106.616	26.192	-73.071	1000 30	29	EF	C4
5736	6/22/98	10:45:46	3	33.361	-106.634	36.436	-121.051	1000 85	45	EF	C5
5736	6/22/98	12:16:31	2	33.358	-106.616	25.819	-70.819	1000 30	37	EF	C5
5736	6/22/98	13:56:16	2	33.355	-106.627	35.839	-118.704	1000 85	45	EF	C5
5736	6/22/98	15:02:32	B	33.343	-106.465	26.916	-78.083	1000 C5	37	EF	C5
5736	6/22/98	15:36:17	A	33.359	-106.615	45.179	-166.899	1000 7C	37	EF	C5
5736	6/23/98	08:51:27	A	33.355	-106.611	24.756	-68.184	1000 0	0	0	0
5736	6/23/98	10:35:43	3	33.358	-106.633	35.257	-115.708	1000 50	37	EF	C5
5736	6/23/98	12:14:43	B	33.365	-106.629	44.879	-164.108	1000 50	37	EF	C5
5736	6/23/98	14:51:28	2	33.355	-106.617	25.670	-72.574	1000 50	37	EF	C5
5736	6/23/98	15:14:48	A	33.139	-106.778	42.930	-156.179	1000 8D	27	EF	C5
5736	6/23/98	16:33:33	2	33.357	-106.630	36.244	-120.041	1000 50	37	EF	C5
5736	6/24/98	10:22:45	1	33.362	-106.653	34.172	-110.440	1000 89	19	EF	C4
5736	6/24/98	11:31:00	B	33.372	-106.637	21.583	-49.153	1000 89	19	EF	C4
5736	6/24/98	12:03:15	1	33.366	-106.618	44.171	-158.620	1000 89	19	EF	C4
5736	6/24/98	13:12:15	1	33.351	-106.608	31.511	-97.752	1000 89	19	EF	C4
5736	6/24/98	14:39:15	1	33.354	-106.627	24.427	-66.523	1000 89	19	EF	C4
5736	6/24/98	14:53:30	2	33.349	-106.623	41.138	-145.394	1000 89	19	EF	C4
5736	6/24/98	16:21:47	1	33.359	-106.632	34.947	-114.227	1000 92	37	EF	C4
5736	6/25/98	11:51:03	B	33.389	-106.474	42.986	-153.067	1000 3	37	EF	C4
5736	6/25/98	12:53:18	B	33.563	-106.406	29.618	-87.105	1000 3	37	EF	C4
5736	6/25/98	13:30:48	A	33.353	-106.623	24.333	-64.437	1000 3	37	EF	C4
5736	6/25/98	14:29:18	A	33.355	-106.617	23.415	-60.462	1000 3	37	EF	C4
5736	6/25/98	14:32:18	2	33.357	-106.627	39.018	-134.869	1000 3	37	EF	C4
5736	6/25/98	15:11:18	3	33.358	-106.638	34.507	-112.176	1000 3	37	EF	C4
5736	6/25/98	16:09:47	0	33.367	-106.628	33.675	-108.164	1000 3	37	EF	C4
5736	6/25/98	16:49:48	A	33.351	-106.626	44.195	-160.281	1000 D2	35	EF	C5
5736	6/25/98	17:50:33	A	33.343	-106.620	43.416	-156.561	1000 D2	35	EF	C5
5736	6/26/98	11:42:01	2	33.354	-106.624	41.866	-147.727	1000 8A	17	EF	C4
5736	6/26/98	12:28:31	2	33.352	-106.622	27.028	-76.665	1000 8A	17	EF	C4
5736	6/26/98	14:09:00	3	33.357	-106.625	36.984	-124.450	1000 8A	17	EF	C4
5736	6/26/98	14:51:00	2	33.348	-106.593	32.355	-101.751	1000 8A	17	EF	C4
5736	6/26/98	15:49:30	B	33.325	-106.611	45.837	-172.987	1000 8A	17	EF	C4

5736	6/26/98 15:54:45	2	33.345	-106.599	32.421	-102.423	1000 8A	17	EF	C4
5736	6/26/98 16:29:15	2	33.351	-106.623	41.989	-149.501	1000 8A	17	EF	C4
5736	6/27/98 12:06:05	A	33.370	-106.608	24.792	-66.348	1000 40	19	EF	C4
5736	6/27/98 13:47:19	3	33.357	-106.634	34.888	-113.887	1000 40	19	EF	C4
5736	6/27/98 14:27:49	2	33.351	-106.613	30.082	-91.109	1000 40	19	EF	C4
5736	6/27/98 15:27:04	A	33.366	-106.615	44.138	-162.069	1000 40	19	EF	C4
5736	6/27/98 15:44:19	3	33.352	-106.611	31.134	-96.307	1000 40	19	EF	C4
5736	6/27/98 16:09:04	3	33.355	-106.620	39.811	-138.993	1000 40	19	EF	C4
5736	6/27/98 17:22:34	3	33.354	-106.622	41.400	-144.206	1000 40	19	EF	C4
5736	6/28/98 21:03:51	3	33.360	-106.606	35.967	-94.521	1000 49	27	EF	C4
5736	6/28/98 22:43:36	3	33.358	-106.619	25.472	-142.515	1000 DE	37	EF	C4
5736	6/28/98 23:04:36	A	33.358	-106.618	42.929	-57.245	1000 38	27	EF	C4
5736	6/29/98 00:41:58	1	33.382	-106.502	33.650	-105.175	1000 49	27	EF	C4
5736	6/29/98 01:22:28	3	33.356	-106.612	38.169	-82.771	1000 DE	37	EF	C4
5736	6/30/98 01:01:43	B	33.401	-106.638	40.210	-72.318	1000 49	27	EF	C4
5736	6/30/98 02:01:43	2	33.360	-106.629	25.880	-142.367	1000 0F	27	EF	C4
5736	6/30/98 02:38:28	3	33.353	-106.610	36.935	-89.429	1000 7A	45	EF	C4
5736	6/30/98 02:39:13	2	33.352	-106.629	30.601	-119.974	1000 FB	29	EF	C4
5736	6/30/98 04:21:58	2	33.356	-106.621	26.568	-137.340	1000 C4	27	EF	C4
5736	7/1/98 09:06:41	2	33.357	-106.617	26.081	-73.161	1000 8E	19	EF	C4
5736	7/1/98 10:47:56	1	33.365	-106.636	36.475	-121.014	1000 7A	27	EF	C4
5736	7/1/98 12:19:25	3	33.363	-106.625	26.109	-71.902	1000 52	27	EF	C4
5736	7/1/98 14:54:48	B	33.254	-106.701	25.909	-72.215	1000 52	27	EF	C4
5736	7/2/98 01:57:28	1	33.382	-106.576	34.950	-99.100	1000 D6	37	EF	C4
5736	7/2/98 02:16:13	A	33.363	-106.623	39.634	-77.540	1000 D6	37	EF	C4
5736	7/2/98 03:37:58	2	33.357	-106.618	-0.361	-0.603	1000 D6	37	EF	C4
5736	7/2/98 03:57:28	3	33.357	-106.623	29.226	-125.371	1000 D6	37	EF	C4
5736	7/2/98 08:56:13	2	33.358	-106.618	25.045	-67.921	1000 60	27	EF	C4
5736	7/3/98 08:44:30	1	33.344	-106.624	23.824	-62.617	1000 CF	27	EF	C5
5736	7/3/98 10:23:30	2	33.364	-106.651	34.208	-110.561	1000 60	27	EF	C4
5736	7/3/98 12:04:00	0	33.354	-106.640	44.210	-158.767	1000 16	27	EF	C4
5736	7/3/98 13:13:45	2	33.350	-106.616	31.746	-98.908	1000 CF	27	EF	C5
5736	7/3/98 13:54:14	1	33.350	-106.615	26.800	-76.108	1000 60	55	55	55
5736	7/3/98 14:56:18	0	33.333	-106.639	41.174	-146.668	1000 16	27	EF	C4
5736	7/3/98 15:35:18	2	33.354	-106.632	36.863	-123.649	1000 55	37	EF	C5
5736	7/3/98 16:09:03	1	33.372	-106.701	33.662	-108.062	1000 55	37	EF	C5
5736	7/4/98 15:12:42	0	33.361	-106.646	34.723	-113.185	1000 E2	35	EF	C5
5736	7/4/98 15:57:42	A	33.355	-106.610	32.413	-102.158	1000 3D	27	EF	C4
5736	7/4/98 16:53:12	2	33.349	-106.627	44.220	-161.196	1000 38	27	EF	C4
5736	7/4/98 17:37:27	A	33.352	-106.622	42.417	-150.162	1000 38	27	EF	C4
5736	7/4/98 19:56:12	0	33.383	-106.631	42.537	-62.581	1000 55	37	EF	C5
5736	7/4/98 21:34:41	1	33.351	-106.645	32.521	-110.562	1000 E2	35	EF	C5
5736	7/5/98 23:07:20	1	33.366	-106.646	23.080	-153.097	1000 0B	27	EF	C5
5736	7/5/98 23:48:35	3	33.353	-106.625	38.813	-79.505	1000 4B	27	EF	C5
5736	7/6/98 00:30:35	A	33.355	-106.625	43.378	-56.810	1000 AA	25	EF	C5
5736	7/6/98 01:26:05	0	33.348	-106.620	44.287	-53.245	1000 38	27	EF	C4
5736	7/6/98 01:31:20	3	33.350	-106.635	29.042	-127.035	1000 6B	27	EF	C5
5736	7/6/98 02:10:20	1	33.366	-106.549	0.607	3.206	1000 E2	35	EF	C5
5736	7/6/98 03:07:20	1	33.359	-106.593	34.464	-101.518	1000 38	27	EF	C4
5736	7/6/98 03:48:34	0	33.422	-106.649	23.818	-152.592	1000 AA	25	EF	C5
5736	7/6/98 04:47:04	1	33.350	-106.628	24.024	-149.219	1000 38	27	EF	C4
5736	7/7/98 04:34:58	2	33.357	-106.625	25.282	-143.277	1000 95	29	EF	C4
5736	7/7/98 09:39:28	3	33.357	-106.614	29.589	-89.360	1000 95	29	EF	C4
5736	7/7/98 11:20:17	2	33.360	-106.629	39.851	-137.151	1000 49	47	EF	C4
5736	7/7/98 11:46:32	B	33.371	-106.617	23.244	-56.576	1000 EB	25	EF	C5
5736	7/8/98 11:11:24	2	33.357	-106.625	38.593	-132.030	1000 E1	27	EF	C4
5736	7/8/98 13:05:24	3	33.350	-106.605	30.750	-94.110	1000 B6	37	EF	C4
5736	7/8/98 13:45:54	2	33.355	-106.609	25.873	-71.211	1000 AC	37	EF	C5
5736	7/8/98 14:45:54	A	33.350	-106.622	40.194	-141.934	1000 CC	27	EF	C5

5736	7/8/98	15:06:09	2	33.343	-106.608	27.059	-78.249	1000	AC	37	EF	C5
5736	7/8/98	15:24:09	2	33.352	-106.623	35.931	-118.965	1000	AC	37	EF	C5
5736	7/8/98	16:42:54	B	33.505	-106.757	38.207	-124.314	1000	AB	57	EF	85
5736	7/9/98	20:41:20	3	33.354	-106.604	38.130	-84.108	1000	67	27	EF	C5
5736	7/9/98	22:24:05	3	33.350	-106.603	27.730	-131.791	1000	61	35	EF	C5
5736	7/10/98	00:00:46	3	33.353	-106.601	37.658	-85.277	1000	61	35	EF	C5
5736	7/10/98	00:44:16	B	33.361	-106.639	42.112	-63.144	1000	67	27	EF	C5
5736	7/11/98	01:20:45	3	33.353	-106.617	30.046	-122.391	1000	92	29	EF	C5
5736	7/11/98	02:01:15	3	33.362	-106.595	34.760	-100.009	1000	67	27	EF	C5
5736	7/11/98	02:04:15	A	33.361	-106.597	40.619	-71.388	1000	67	27	EF	C5
5736	7/11/98	03:41:00	1	33.357	-106.614	24.529	-147.703	1000	48	37	EF	C5
5736	7/11/98	03:42:30	1	33.352	-106.618	30.715	-119.175	1000	48	37	EF	C5
5736	7/12/98	10:26:27	2	33.365	-106.660	34.182	-110.463	1000	7B	27	EF	C5
5736	7/12/98	13:16:16	2	33.352	-106.609	31.986	-99.968	1000	70	47	EF	C4
5736	7/12/98	13:58:16	3	33.354	-106.614	27.177	-76.792	1000	70	47	EF	C4
5736	7/13/98	13:35:30	A	33.355	-106.635	24.854	-66.514	1000	76	47	EF	C5
5736	7/13/98	14:36:15	3	33.360	-106.630	39.455	-137.085	1000	26	27	EF	C4
5736	7/13/98	15:16:44	3	33.361	-106.637	34.900	-114.187	1000	26	27	EF	C4
5736	7/13/98	15:45:59	2	33.360	-106.623	31.076	-96.024	1000	D5	25	ED	C0
5736	7/13/98	17:26:29	2	33.365	-106.639	41.119	-143.889	1000	70	47	EF	C4
5736	7/13/98	19:58:15	B	33.428	-106.774	42.455	-62.647	1000	EE	35	EF	C4
5736	7/14/98	23:04:53	B	33.446	-106.817	23.618	-153.089	1000	26	27	EF	C4
5736	7/14/98	23:50:38	3	33.362	-106.614	38.594	-80.516	1000	26	27	EF	C4
5736	7/15/98	01:29:38	3	33.357	-106.625	28.928	-128.392	1000	76	47	EF	C5
5736	7/15/98	02:08:12	0	33.338	-106.701	33.557	-105.626	1000	25	27	EF	C4
5736	7/15/98	02:53:57	1	33.362	-106.582	35.538	-95.502	1000	25	27	EF	C4
5736	7/16/98	02:41:44	1	33.360	-106.615	37.075	-89.290	1000	5E	37	EF	C5
5736	7/16/98	03:28:59	A	33.357	-106.622	25.781	-143.262	1000	68	47	EF	C4
5736	7/16/98	04:22:14	B	33.319	-106.614	26.832	-137.180	1000	26	27	EF	C4
5736	7/16/98	09:41:59	2	33.358	-106.607	29.596	-89.293	1000	68	47	EF	C4
5736	7/17/98	09:30:29	3	33.359	-106.613	28.406	-83.976	1000	88	37	EF	C4
5736	7/17/98	11:10:58	3	33.362	-106.624	38.694	-131.905	1000	5E	37	EF	C5
5736	7/17/98	13:04:58	1	33.354	-106.609	30.992	-95.259	1000	26	27	EF	C4
5736	7/17/98	13:48:28	2	33.345	-106.621	26.106	-72.227	1000	AC	27	EF	C4
5736	7/17/98	14:43:58	1	33.358	-106.629	40.894	-143.427	1000	88	37	EF	C4
5736	7/17/98	14:52:58	B	33.356	-106.643	25.711	-71.686	1000	26	27	EF	C4
5736	7/17/98	15:27:50	B	33.340	-106.662	35.951	-119.886	1000	88	37	EF	C4
5736	7/17/98	16:36:05	1	33.355	-106.626	36.155	-119.828	1000	E5	27	EF	C4
5736	7/18/98	16:20:39	Z	33.357	-106.636	34.916	-113.336	1000	40	27	EF	C4
5736	7/18/98	16:45:24	B	33.360	-106.637	43.330	-157.501	1000	40	27	EF	C4
5736	7/18/98	20:41:39	1	33.357	-106.613	38.046	-84.259	1000	5E	37	EF	C5
5736	7/18/98	22:23:25	1	33.352	-106.620	27.763	-132.089	1000	70	37	EF	C4
5736	7/19/98	22:12:15	0	33.386	-106.579	29.005	-126.673	1000	A2	35	EF	C5
5736	7/19/98	23:40:45	3	33.352	-106.607	39.539	-75.989	1000	E0	27	EF	C4
5736	7/20/98	00:21:15	B	33.348	-106.604	43.809	-52.988	1000	50	37	EF	C4
5736	7/20/98	01:22:00	1	33.359	-106.630	29.816	-123.535	1000	A2	35	EF	C5
5736	7/20/98	01:52:00	2	33.360	-106.614	41.930	-65.133	1000	13	37	EF	C4
5736	7/20/98	01:58:45	1	33.361	-106.594	34.493	-100.999	1000	40	27	EF	C4
5736	7/20/98	03:34:44	2	33.355	-106.626	31.961	-112.993	1000	13	37	EF	C4
5736	7/20/98	03:40:44	A	33.357	-106.608	24.649	-148.854	1000	E0	27	EF	C4
5736	7/21/98	05:01:22	2	33.355	-106.622	22.690	-154.934	1000	53	37	EF	C5
5736	7/21/98	08:43:22	A	33.357	-106.609	23.620	-63.151	1000	E2	37	EF	C4
5736	7/21/98	10:26:07	1	33.364	-106.644	34.194	-110.605	1000	E2	37	EF	C4
5736	7/21/98	12:08:30	B	33.388	-106.622	43.947	-158.961	1000	E2	37	EF	C4
5736	7/22/98	12:58:52	3	33.360	-106.609	30.106	-90.543	1000	84	33	EF	C4
5736	7/22/98	13:37:52	1	33.354	-106.608	25.055	-67.551	1000	E2	37	EF	C4
5736	7/22/98	14:37:07	3	33.361	-106.617	39.678	-138.334	1000	B1	27	EF	C4
5736	7/22/98	15:16:52	1	33.360	-106.620	35.186	-115.346	1000	CB	19	EF	C4
5736	7/22/98	15:33:22	1	33.358	-106.607	29.742	-89.758	1000	DA	25	EF	C4

5736	7/22/98 17:13:07	2	33.356	-106.614	39.991	-137.697	1000	84	33	EF	C4
5736	7/23/98 21:27:54	0	33.373	-106.545	33.598	-105.498	1000	CB	19	EF	C4
5736	7/23/98 23:09:54	0	33.348	-106.622	22.946	-153.174	1000	E3	27	EF	C4
5736	7/23/98 23:51:54	2	33.358	-106.612	38.369	-81.710	1000	94	37	EF	C4
5736	7/24/98 01:31:28	1	33.352	-106.631	28.612	-129.609	1000	94	37	EF	C4
5736	7/25/98 01:11:51	3	33.351	-106.634	30.804	-118.836	1000	E8	25	EF	C4
5736	7/25/98 01:53:06	1	33.369	-106.604	0.663	1.021	1000	E8	25	EF	C4
5736	7/25/98 02:29:51	2	33.360	-106.618	-0.381	-0.570	1000	B6	27	EF	C5
5736	7/25/98 03:30:36	2	33.353	-106.614	25.611	-144.098	1000	7B	19	EF	C4
5736	7/26/98 09:32:37	A	33.359	-106.629	28.579	-84.125	1000	37	35	EF	C4
5736	7/26/98 11:13:52	2	33.357	-106.623	38.618	-132.043	1000	9	27	EF	C4
5736	7/26/98 13:09:19	0	33.387	-106.622	31.313	-96.252	1000	F7	33	EF	C5
5736	7/26/98 13:50:31	3	33.355	-106.620	26.328	-73.216	1000	F7	33	EF	C5
5736	7/26/98 14:44:30	1	33.363	-106.613	24.599	-65.900	1000	11	27	EF	C4
5736	7/26/98 14:49:00	3	33.352	-106.621	40.814	-144.138	1000	EE	19	EF	C4
5736	7/27/98 13:28:41	B	33.434	-106.603	24.404	-62.749	1000	EE	1D	FC	DD
5736	7/27/98 14:25:12	A	33.355	-106.626	38.943	-133.803	1000	AA	25	EF	C5
5736	7/27/98 14:31:12	B	33.368	-106.609	23.406	-59.888	1000	4B	27	EF	C4
5736	7/27/98 15:09:27	1	33.363	-106.651	34.161	-110.478	1000	4B	27	EF	C4
5736	7/27/98 17:49:57	A	33.331	-106.646	43.776	-155.996	1000	49	27	EF	C4
5736	7/27/98 20:42:35	B	33.438	-106.640	38.148	-84.054	1000	CF	35	EF	C5
5736	7/28/98 20:32:56	1	33.357	-106.617	39.301	-78.900	1000	11	27	EF	C4
5736	7/28/98 22:13:26	2	33.355	-106.654	28.924	-126.928	1000	11	27	EF	C4
5736	7/28/98 23:42:41	3	33.351	-106.626	39.350	-76.950	1000	AA	25	EF	C5
5736	7/29/98 01:23:11	3	33.360	-106.634	29.609	-124.714	1000	49	27	EF	C4
5736	7/29/98 02:02:56	1	33.362	-106.594	34.273	-102.148	1000	49	27	EF	C4
5736	7/29/98 03:46:29	B	33.251	-106.756	24.204	-150.224	1000	17	37	EF	C4
5736	7/30/98 03:11:15	2	33.354	-106.594	33.887	-103.276	1000	4B	27	EF	C4
5736	7/30/98 03:25:30	2	33.348	-106.615	26.327	-139.006	1000	CF	35	EF	C5
5736	7/30/98 04:50:15	2	33.349	-106.615	23.994	-148.782	1000	CF	35	EF	C5
5736	7/30/98 10:24:03	1	33.352	-106.642	34.144	-110.050	1000	AA	25	EF	C5
5736	7/31/98 10:16:01	0	33.318	-106.412	33.149	-105.626	1000	AA	25	EF	C5
5736	7/31/98 11:55:46	B	33.396	-106.550	42.970	-153.513	1000	AA	25	EF	C5
5736	7/31/98 12:58:46	A	33.362	-106.613	30.380	-91.463	1000	CF	35	EF	C5
5736	7/31/98 13:39:16	1	33.356	-106.622	25.180	-68.597	1000	11	27	EF	C4
5736	7/31/98 14:37:46	2	33.358	-106.629	39.980	-139.383	1000	39	33	EF	C4
5736	7/31/98 15:20:31	B	33.366	-106.633	35.336	-116.332	1000	17	37	EF	C4
5736	7/31/98 17:01:04	2	33.352	-106.601	38.697	-131.483	1000	39	33	EF	C4
5736	8/1/98 16:49:30	1	33.363	-106.624	37.404	-125.492	1000	11	27	EF	C4
5736	8/1/98 19:48:00	A	33.364	-106.580	43.428	-57.447	1000	39	33	EF	C4
5736	8/1/98 21:26:15	0	33.389	-106.490	33.586	-105.553	1000	F0	37	EF	C5
5736	8/1/98 23:11:18	A	33.358	-106.616	22.934	-153.146	1000	49	27	EF	C4
5736	8/1/98 23:54:03	2	33.351	-106.610	38.147	-82.811	1000	AA	25	EF	C5
5736	8/2/98 22:58:16	A	33.342	-106.618	24.225	-148.020	1000	F0	37	EF	C5
5736	8/2/98 23:32:46	3	33.360	-106.605	40.353	-72.345	1000	F0	37	EF	C5
5736	8/3/98 01:11:45	2	33.353	-106.632	30.561	-120.073	1000	A6	17	EF	C5
5736	8/3/98 01:55:15	2	33.360	-106.601	35.254	-97.471	1000	39	33	EF	C4
5736	8/3/98 02:17:00	1	33.350	-106.614	39.482	-76.786	1000	A6	17	EF	C5
5736	8/3/98 03:35:00	3	33.349	-106.622	25.112	-145.207	1000	17	37	EF	C4
5736	8/3/98 03:59:00	3	33.351	-106.623	29.404	-124.806	1000	A6	17	EF	C5
5736	8/4/98 09:33:50	A	33.359	-106.610	28.574	-84.138	1000	29	37	EF	C5
5736	8/4/98 11:12:05	3	33.359	-106.615	38.774	-132.113	1000	65	27	EF	C4
5736	8/4/98 13:09:01	B	33.374	-106.638	31.461	-97.273	1000	65	27	EF	C4
5736	8/5/98 00:28:06	2	33.370	-106.600	34.885	-99.097	1000	0	0	4	0
5736	8/5/98 01:08:53	0	33.362	-106.592	39.384	-76.298	1000	0	0	0	0
5736	8/5/98 01:54:52	B	33.343	-106.587	41.838	-65.041	1000	0	0	8	0
5736	8/5/98 02:49:45	A	33.342	-106.607	29.746	-124.063	1000	0	0	0	0
5736	8/5/98 03:35:44	3	33.341	-106.627	32.018	-112.676	1000	0	0	0	0
5736	8/6/98 09:08:21	2	33.354	-106.605	26.045	-73.624	1000	62	39	EF	C5

5736	8/6/98	10:47:21	2	33.356	-106.612	36.602	-121.667	1000	62	39	EF	C5
5736	8/6/98	12:24:09	A	33.285	-106.483	26.993	-76.884	1000	62	39	EF	C5
5736	8/6/98	12:31:39	B	33.399	-106.632	45.963	-170.004	1000	62	39	EF	C5
5736	8/6/98	13:06:09	B	33.379	-106.661	22.086	-52.638	1000	62	39	EF	C5
5736	8/6/98	14:06:54	2	33.350	-106.612	36.887	-124.165	1000	62	39	EF	C5
5736	8/7/98	13:44:25	1	33.365	-106.659	34.763	-113.654	1000	62	39	EF	C5
5736	8/7/98	14:27:10	3	33.361	-106.627	30.016	-90.517	1000	62	39	EF	C5
5736	8/7/98	15:24:55	B	33.306	-106.623	43.905	-161.997	1000	62	39	EF	C5
5736	8/7/98	15:36:55	B	33.300	-106.769	29.517	-89.403	1000	62	39	EF	C5
5736	8/7/98	16:07:40	3	33.360	-106.629	39.729	-138.235	1000	62	39	EF	C5
5736	8/7/98	17:15:10	2	33.359	-106.626	39.849	-137.448	1000	62	39	EF	C5
5736	8/7/98	20:21:58	A	33.356	-106.636	40.355	-73.482	1000	62	39	EF	C5
5736	8/8/98	20:10:45	2	33.363	-106.631	41.406	-68.230	1000	62	39	EF	C5
5736	8/8/98	21:51:15	2	33.355	-106.657	31.296	-116.369	1000	62	1C	AD	42
5736	8/8/98	23:31:45	B	33.340	-106.696	21.237	-164.077	1000	62	39	EF	C5
5736	8/9/98	00:39:15	0	33.382	-106.502	33.687	-104.982	1000	62	39	EF	C5
5736	8/9/98	01:22:45	3	33.359	-106.611	38.360	-82.182	1000	62	39	ED	C5
5736	8/9/98	02:19:47	B	33.323	-106.611	23.978	-152.700	1000	62	39	EF	C5
5736	8/9/98	02:42:17	A	33.362	-106.602	37.106	-88.830	1000	62	39	EF	C5
5736	8/9/98	03:01:47	3	33.359	-106.614	28.437	-130.045	1000	62	39	EF	C5
5736	8/10/98	01:57:53	B	33.346	-106.559	26.173	-142.468	1000	62	39	EF	C5
5736	8/10/98	02:32:34	2	33.366	-106.605	38.471	-82.736	1000	62	39	EF	C5
5736	8/10/98	02:39:19	A	33.359	-106.622	30.636	-119.551	1000	62	39	EF	C5
5736	8/10/98	04:13:49	3	33.361	-106.616	28.061	-130.528	1000	62	39	EF	C5
5736	8/11/98	09:54:32	2	33.343	-106.596	30.688	-94.748	1000	62	39	EF	C5
5736	8/11/98	11:35:02	B	33.361	-106.606	40.824	-142.833	1000	62	39	EF	C5
5736	8/11/98	12:15:32	3	33.349	-106.603	26.064	-71.652	1000	62	39	EF	C5
5736	8/11/98	13:54:32	3	33.358	-106.618	36.039	-119.515	1000	62	39	EF	C5
5736	8/11/98	14:36:32	2	33.358	-106.605	31.233	-96.532	1000	62	39	EF	C5
5736	8/11/98	16:19:32	2	33.363	-106.619	40.851	-144.087	1000	62	39	EF	C5
5736	8/11/98	16:28:32	A	33.362	-106.628	34.812	-113.469	1000	62	39	EF	C5
5736	8/12/98	03:35:45	A	33.370	-106.627	25.230	-146.099	1000	0	0	0	0
5736	8/12/98	03:48:22	3	33.360	-106.631	30.762	-118.509	1000	0	0	0	0
5736	8/12/98	09:46:19	A	33.357	-106.611	29.753	-89.497	1000	2B	AD	55	54
5736	8/13/98	03:33:48	B	33.341	-106.575	32.061	-112.566	1000	0	0	0	0
5736	8/13/98	09:31:44	2	33.352	-106.608	28.466	-84.006	1000	0	0	0	0
5736	8/13/98	11:14:10	3	33.353	-106.619	38.649	-132.077	1000	0	0	0	0
5736	8/14/98	11:01:43	A	33.357	-106.612	37.531	-126.569	1000	0	0	0	0
5736	8/14/98	12:52:58	A	33.356	-106.613	29.640	-88.119	1000	0	0	0	0
5736	8/14/98	13:32:17	2	33.357	-106.623	24.411	-64.808	1000	0	0	0	0
5736	8/14/98	14:31:37	3	33.354	-106.607	39.092	-135.939	1000	0	0	0	0
5736	8/14/98	15:14:37	3	33.359	-106.627	34.563	-112.521	1000	0	0	0	0
5736	8/14/98	15:48:00	1	33.349	-106.610	30.908	-95.416	1000	0	0	0	0
5736	8/14/98	17:28:12	3	33.359	-106.616	40.989	-143.186	1000	0	0	0	0
5736	8/15/98	10:50:43	1	33.365	-106.656	36.516	-121.330	1000	0	0	0	0
5736	8/15/98	12:27:08	2	33.355	-106.610	27.240	-77.472	1000	0	0	0	0
5736	8/15/98	13:11:38	B	33.371	-106.630	22.633	-54.256	1000	0	0	0	0
5736	8/15/98	14:08:00	1	33.351	-106.616	37.170	-125.104	1000	0	0	0	0
5736	8/15/98	14:51:01	1	33.350	-106.616	32.379	-102.020	1000	0	0	0	0
5736	8/15/98	16:30:23	0	33.347	-106.623	42.094	-149.793	1000	0	0	0	0
5736	8/15/98	17:16:11	3	33.354	-106.620	39.790	-137.189	1000	0	0	0	0
5736	8/16/98	17:05:07	2	33.358	-106.625	38.479	-131.370	1000	0	0	0	0
5736	8/16/98	20:21:45	2	33.356	-106.614	40.175	-73.507	1000	0	0	0	0
5736	8/16/98	22:05:35	2	33.353	-106.632	30.131	-121.286	1000	0	0	0	0
5736	8/16/98	23:22:48	0	33.349	-106.609	40.833	-68.537	1000	0	0	0	0
5736	8/17/98	01:05:09	A	33.360	-106.627	31.321	-116.236	1000	0	0	0	0
5736	8/18/98	01:24:13	1	33.358	-106.613	38.131	-83.211	1000	0	0	0	0
5736	8/18/98	02:25:02	B	33.310	-106.763	23.246	-154.448	1000	0	5	40	0
5736	8/18/98	02:32:27	2	33.352	-106.621	38.420	-82.624	1000	0	0	0	0

5736	8/18/98 03:04:20	1	33.341	-106.635	28.263	-130.929	1000 0	0	0	0
5736	8/19/98 10:09:14	A	33.352	-106.607	32.010	-100.169	1000 26	27	EF	C4
5736	8/19/98 10:09:14	A	33.352	-106.607	32.010	-100.169	1000 26	27	EF	C4
5736	8/19/98 11:46:43	B	33.364	-106.605	41.882	-148.177	1000 26	27	EF	C4
5736	8/19/98 11:46:43	B	33.364	-106.605	41.882	-148.177	1000 26	27	EF	C4
5736	8/19/98 12:40:01	3	33.356	-106.604	28.565	-83.243	1000 BB	35	EF	C4
5736	8/19/98 12:40:01	3	33.356	-106.604	28.565	-83.243	1000 BB	35	EF	C4
5736	8/19/98 13:23:31	1	33.357	-106.605	23.554	-59.994	1000 26	27	EF	C4
5736	8/19/98 13:23:31	1	33.357	-106.605	23.554	-59.994	1000 26	27	EF	C4
5736	8/20/98 09:53:14	3	33.327	-106.605	30.775	-94.978	1000 CC	27	EF	C4
5736	8/20/98 09:53:14	3	33.327	-106.605	30.775	-94.978	1000 CC	27	EF	C4
5736	8/20/98 11:38:59	2	33.328	-106.622	40.706	-142.991	1000 CC	27	EF	C4
5736	8/20/98 11:38:59	2	33.328	-106.622	40.706	-142.991	1000 CC	27	EF	C4
5736	8/20/98 12:17:14	A	33.333	-106.609	26.245	-72.833	1000 CC	27	EF	C4
5736	8/20/98 12:17:14	A	33.333	-106.609	26.245	-72.833	1000 CC	27	EF	C4
5736	8/20/98 13:56:29	3	33.356	-106.623	36.355	-120.318	1000 CC	27	EF	C4
5736	8/20/98 13:56:29	3	33.356	-106.623	36.355	-120.318	1000 CC	27	EF	C4
5736	8/20/98 14:30:59	0	33.349	-106.593	22.837	-59.603	1000 CC	27	EF	C4
5736	8/20/98 14:30:59	0	33.349	-106.593	22.837	-59.603	1000 CC	27	EF	C4
5736	8/20/98 14:37:44	2	33.346	-106.594	-0.347	1.011	1000 CC	27	EF	C4
5736	8/20/98 14:37:44	2	33.346	-106.594	-0.347	1.011	1000 CC	27	EF	C4
5736	8/21/98 13:33:07	1	33.355	-106.605	33.908	-109.102	1000 9C	27	EF	C5
5736	8/21/98 14:18:07	2	33.352	-106.612	29.057	-86.828	1000 1F	45	EF	C5
5736	8/21/98 15:16:37	A	33.336	-106.609	43.221	-158.252	1000 1F	45	EF	C5
5736	8/21/98 15:59:22	3	33.355	-106.613	38.991	-134.508	1000 CC	27	EF	C4
5736	8/21/98 16:02:22	2	33.352	-106.602	32.214	-101.270	1000 1F	45	EF	C5
5736	8/21/98 17:42:07	2	33.350	-106.612	42.169	-149.137	1000 1F	45	EF	C5
5736	8/21/98 21:07:40	1	33.359	-106.633	35.881	-94.953	1000 9C	27	EF	C5
5736	8/22/98 20:55:45	3	33.361	-106.621	36.939	-89.525	1000 1F	45	EF	C5
5736	8/22/98 22:38:29	A	33.362	-106.638	26.473	-137.395	1000 1F	45	EF	C5
5736	8/23/98 00:30:59	3	33.366	-106.600	34.466	-101.271	1000 9C	27	EF	C5
5736	8/23/98 02:06:59	B	33.348	-106.613	24.748	-148.976	1000 1F	45	EF	C5
5736	8/23/98 02:55:02	3	33.360	-106.618	29.283	-126.142	1000 1F	45	EF	C5
5736	8/23/98 03:08:32	2	33.365	-106.592	34.668	-100.409	1000 9C	27	EF	C5
5736	8/24/98 02:30:19	2	33.357	-106.626	31.553	-115.487	1000 1F	45	EF	C5
5736	8/24/98 02:56:37	1	33.362	-106.600	35.928	-94.539	1000 1F	45	EF	C5
5736	8/24/98 04:37:52	3	33.360	-106.621	25.622	-142.359	1000 CC	27	EF	C4
5736	8/24/98 09:10:54	3	33.361	-106.606	26.068	-73.504	1000 9C	27	EF	C5
5736	8/25/98 10:36:54	B	33.198	-106.445	35.694	-115.060	1000 7D	29	EF	C4
5736	8/25/98 12:06:54	2	33.354	-106.627	25.288	-68.050	1000 4D	47	EF	C4
5736	8/25/98 12:19:39	1	33.382	-106.623	45.428	-164.433	1000 9C	27	EF	C5
5736	8/25/98 13:48:09	3	33.365	-106.649	-0.334	-0.363	1000 CC	27	EF	C4
5736	8/25/98 14:32:24	2	33.358	-106.633	-0.220	0.515	1000 68	29	EF	C4
5736	8/25/98 15:11:24	3	33.358	-106.631	26.916	-77.123	1000 EF	37	EF	C4
5736	8/25/98 16:11:39	3	33.359	-106.642	40.155	-140.195	1000 9C	27	EF	C5
5736	8/25/98 16:49:54	B	33.373	-106.821	37.166	-124.695	1000 1F	45	EF	C5
5736	8/26/98 16:40:28	3	33.359	-106.607	36.002	-119.069	1000 7D	29	EF	C4
5736	8/26/98 20:10:28	B	33.399	-106.580	41.279	-68.167	1000 4D	47	EF	C4
5736	8/26/98 21:50:13	3	33.355	-106.623	31.369	-116.056	1000 CC	27	EF	C4
5736	8/26/98 23:04:31	1	33.364	-106.603	42.882	-58.980	1000 1F	45	EF	C5
5736	8/27/98 23:23:13	B	33.325	-106.650	22.247	-158.924	1000 9C	27	EF	C5
5736	8/28/98 00:21:43	2	33.355	-106.635	35.445	-96.584	1000 CC	27	EF	C4
5736	8/28/98 01:05:58	3	33.357	-106.631	40.164	-73.622	1000 1F	45	EF	C5
5736	8/28/98 02:01:28	1	33.345	-106.644	25.414	-144.405	1000 EF	37	EF	C4
5736	8/28/98 02:08:13	A	33.368	-106.636	41.063	-70.421	1000 9C	27	EF	C5
5736	8/28/98 02:46:28	3	33.345	-106.644	30.227	-121.340	1000 7D	29	EF	C4
5736	8/28/98 03:49:28	3	33.346	-106.646	30.813	-118.250	1000 7D	29	EF	C4
5736	8/29/98 05:17:25	A	33.354	-106.625	21.515	-160.068	1000 4D	47	EF	C4
5736	8/29/98 09:53:24	1	33.353	-106.599	30.866	-95.107	1000 EF	37	EF	C4

5736	8/29/98	11:37:22	3	33.358	-106.629	40.864	-142.557	1000	15	27	EF	C4
5736	8/29/98	12:18:37	1	33.351	-106.607	26.390	-73.802	1000	15	27	EF	D3
5736	8/30/98	11:26:11	A	33.352	-106.620	39.853	-137.416	1000	F3	27	EF	C5
5736	8/30/98	11:57:18	1	33.350	-106.604	24.367	-63.280	1000	6B	27	EF	C4
5736	8/30/98	13:37:48	1	33.365	-106.662	34.259	-111.068	1000	5F	27	EF	C4
5736	8/30/98	14:21:18	3	33.355	-106.636	29.356	-87.725	1000	5F	27	EF	C4
5736	8/30/98	15:49:02	2	33.356	-106.613	30.766	-94.989	1000	6B	27	EF	C4
5736	8/30/98	16:01:47	2	33.359	-106.625	39.172	-135.467	1000	98	27	EF	C4
5736	8/30/98	17:30:17	1	33.346	-106.625	40.857	-143.041	1000	8F	27	EF	C4
5736	8/31/98	13:13:40	3	33.352	-106.606	32.120	-100.738	1000	0	0	0	0
5736	8/31/98	13:56:41	A	33.349	-106.611	27.119	-77.639	1000	0	0	0	0
5736	8/31/98	14:58:14	B	33.272	-106.479	41.450	-148.623	1000	0	0	0	0
5736	8/31/98	15:33:05	B	33.380	-106.299	29.121	-88.639	1000	0	0	0	0
5736	8/31/98	15:39:46	1	33.352	-106.617	37.129	-124.789	1000	0	0	0	0
5736	8/31/98	17:16:55	2	33.355	-106.616	39.742	-136.823	1000	0	0	0	0
5736	9/1/98	12:52:17	A	33.354	-106.598	29.950	-90.249	1000	2A	35	EF	C4
5736	9/1/98	13:35:47	1	33.354	-106.620	24.755	-66.886	1000	2A	35	EF	C4
5736	9/1/98	14:34:17	3	33.358	-106.634	39.535	-137.869	1000	2A	35	EF	C4
5736	9/1/98	15:17:47	2	33.359	-106.635	34.987	-114.467	1000	2A	35	EF	C4
5736	9/1/98	17:05:02	2	33.356	-106.630	38.446	-130.929	1000	2A	35	EF	C4
5736	9/1/98	20:45:54	B	33.428	-106.613	38.116	-84.130	1000	2A	35	EF	C4
5736	9/2/98	09:13:08	2	33.349	-106.623	26.162	-73.405	1000	0	0	0	0
5736	9/2/98	10:53:16	2	33.356	-106.638	36.479	-121.384	1000	0	0	0	0
5736	9/2/98	12:32:39	B	33.369	-106.599	27.873	-79.612	1000	0	0	0	0
5736	9/2/98	13:13:26	B	33.381	-106.683	22.812	-55.780	1000	0	0	0	0
5736	9/2/98	14:12:07	3	33.357	-106.633	37.504	-127.399	1000	0	0	0	0
5736	9/2/98	15:09:13	B	33.336	-106.558	26.783	-76.758	1000	0	0	0A	56
5736	9/3/98	13:46:23	0	33.340	-106.648	35.482	-117.008	1000	91	23	EF	C5
5736	9/3/98	14:32:32	3	33.349	-106.601	30.596	-93.499	1000	91	23	EF	C5
5736	9/3/98	14:57:17	1	33.350	-106.608	25.458	-71.137	1000	91	23	EF	C5
5736	9/3/98	15:28:47	A	33.249	-106.633	44.558	-165.138	1000	2E	27	EF	C4
5736	9/3/98	16:12:17	A	33.336	-106.612	40.481	-141.240	1000	91	23	EF	C5
5736	9/3/98	16:37:02	2	33.345	-106.632	36.053	-118.971	1000	2E	27	EF	C4
5736	9/3/98	18:20:32	B	33.244	-106.593	45.412	-167.441	1000	2E	27	EF	C4
5736	9/3/98	20:24:39	2	33.353	-106.604	40.283	-73.604	1000	2E	27	EF	C4
5736	9/4/98	08:49:18	1	33.368	-106.586	23.714	-62.823	1000	0	0	0	0
5736	9/4/98	10:27:56	1	33.360	-106.630	34.287	-110.917	1000	0	0	0	0
5736	9/4/98	11:45:48	1	33.367	-106.626	23.187	-58.539	1000	0	BC	47	7A
5736	9/4/98	12:10:17	A	33.362	-106.599	43.936	-158.896	1000	0	0	0	0
5736	9/4/98	14:09:41	2	33.356	-106.607	28.282	-83.081	1000	0	0	0	0
5736	9/4/98	14:46:12	A	33.356	-106.600	24.141	-65.027	1000	0	0	0	0
5736	9/4/98	15:08:27	B	33.276	-106.555	42.564	-154.541	1000	0	0	0	0
5736	9/4/98	15:51:28	1	33.357	-106.609	38.300	-130.518	1000	0	0	0	0
5738	6/5/98	02:49:38	3	33.138	-106.506	35.362	-95.936	2000	E0	47	EF	C9
5738	6/5/98	04:30:53	2	33.139	-106.493	25.065	-143.772	2000	E0	47	EF	C9
5738	6/6/98	08:39:53	1	33.140	-106.516	23.427	-62.615	2000	AB	19	EF	C7
5738	6/6/98	10:18:53	1	33.138	-106.470	33.837	-109.391	2000	E3	27	EF	C7
5738	6/6/98	12:01:36	1	33.138	-106.496	43.916	-158.685	2000	EC	49	EF	C7
5738	6/6/98	13:12:06	B	33.147	-106.510	30.933	-95.525	2000	AB	19	EF	C7
5738	6/7/98	11:51:04	1	33.128	-106.492	42.789	-153.303	2000	A1	27	EF	C7
5738	6/7/98	11:51:04	1	33.128	-106.492	42.789	-153.303	2000	A1	27	EF	C7
5738	6/7/98	12:48:49	3	33.143	-106.515	0.374	-0.573	2000	CE	27	EF	C7
5738	6/7/98	12:48:49	3	33.143	-106.515	0.374	-0.573	2000	CE	27	EF	C7
5738	6/7/98	14:27:49	3	33.139	-106.496	38.454	-132.804	2000	B3	47	EF	C7
5738	6/7/98	14:27:49	3	33.139	-106.496	38.454	-132.804	2000	B3	47	EF	C7
5738	6/7/98	14:51:49	B	33.123	-106.514	25.917	-72.918	2000	CE	23	EF	C7
5738	6/7/98	14:51:49	B	33.123	-106.514	25.917	-72.918	2000	CE	23	EF	C7
5738	6/7/98	16:32:19	3	33.139	-106.492	36.181	-120.754	2000	EC	49	EF	C7
5738	6/7/98	16:32:19	3	33.139	-106.492	36.181	-120.754	2000	EC	49	EF	C7

5738	6/8/98	21:20:44	A	33.127	-106.584	33.506	-104.773	2000	84	37	EF	C7
5738	6/8/98	23:43:59	2	33.140	-106.513	39.306	-75.857	2000	0E	39	EF	C7
5738	6/9/98	01:22:46	2	33.146	-106.491	29.610	-123.892	2000	28	27	EF	C7
5738	6/9/98	02:01:46	2	33.139	-106.514	40.508	-71.858	2000	84	37	EF	C7
5738	6/10/98	01:01:07	0	33.158	-106.457	31.773	-113.258	2000	E7	19	EF	C7
5738	6/10/98	01:50:37	A	33.135	-106.513	41.883	-65.571	2000	35	27	EF	C7
5738	6/10/98	03:27:22	2	33.147	-106.480	31.607	-113.726	2000	C6	27	EF	C7
5738	6/11/98	09:25:26	3	33.145	-106.513	28.183	-83.913	2000	EA	27	EF	C7
5738	6/11/98	11:08:11	3	33.141	-106.497	38.429	-131.797	2000	91	37	EF	C7
5738	6/11/98	13:01:25	3	33.143	-106.514	29.959	-90.884	2000	35	27	EF	C7
5738	6/11/98	14:41:15	2	33.142	-106.501	39.498	-138.784	2000	35	27	EF	C7
5738	6/12/98	14:19:17	2	33.141	-106.498	37.486	-128.160	2000	87	37	EF	C7
5738	6/12/98	15:31:17	3	33.144	-106.517	29.757	-90.754	2000	74	29	EF	C7
5738	6/12/98	17:11:02	3	33.139	-106.498	39.843	-138.622	2000	5A	39	EF	C7
5738	6/12/98	20:37:33	3	33.141	-106.514	37.947	-83.781	2000	74	29	EF	C7
5738	6/13/98	22:07:03	3	33.145	-106.493	28.836	-126.431	2000	3	37	EF	C7
5738	6/13/98	23:34:03	A	33.135	-106.504	40.234	-71.128	2000	3	37	EF	C7
5738	6/14/98	01:12:18	A	33.145	-106.490	30.601	-119.044	2000	51	29	EF	C7
5738	6/14/98	02:39:18	3	33.140	-106.516	36.713	-89.751	2000	E4	47	EF	C7
5738	6/14/98	04:20:00	2	33.143	-106.498	26.305	-137.681	2000	3	37	EF	C7
5738	6/15/98	04:06:53	3	33.143	-106.498	27.662	-131.729	2000	2A	19	EF	C7
5738	6/15/98	10:21:24	1	33.134	-106.469	34.038	-110.648	2000	71	37	EF	C7
5738	6/16/98	03:52:23	2	33.145	-106.497	29.116	-125.496	2000	0	0	0	0
5738	6/16/98	10:10:33	0	33.165	-106.655	32.850	-105.201	2000	B1	27	EF	C7
5738	6/17/98	10:00:01	2	33.148	-106.531	31.736	-99.867	2000	A9	27	EF	C7
5738	6/17/98	11:40:02	B	33.127	-106.528	41.642	-147.945	2000	A9	27	EF	C7
5738	6/18/98	09:47:59	3	33.142	-106.517	30.547	-94.769	2000	0	0	0	0
5738	6/18/98	11:29:40	A	33.131	-106.492	40.779	-142.671	2000	0	0	0	0
5738	6/19/98	09:41:45	B	33.109	-106.368	29.528	-89.308	2000	A3	29	EF	C7
5738	6/19/98	11:19:15	3	33.141	-106.498	39.568	-137.264	2000	A3	29	EF	C7
5738	6/19/98	13:24:01	1	33.149	-106.535	32.304	-102.475	2000	C5	27	EF	C7
5738	6/20/98	11:06:58	3	33.139	-106.496	38.592	-131.988	2000	F4	29	EF	C7
5738	6/20/98	13:06:00	B	33.235	-106.662	30.338	-91.547	2000	F4	29	EF	C7
5738	6/21/98	09:18:47	A	33.144	-106.511	27.274	-78.788	2000	8C	27	EF	C7
5738	6/21/98	10:57:02	B	33.132	-106.491	37.299	-126.605	2000	8C	27	EF	C7
5738	6/21/98	14:19:32	3	33.140	-106.497	37.764	-129.378	2000	21	29	EF	C7
5738	6/22/98	10:43:34	B	33.159	-106.543	36.303	-120.826	2000	F4	37	EF	C7
5738	6/22/98	13:59:18	B	33.089	-106.424	35.633	-118.953	2000	F4	37	EF	C7
5738	6/23/98	10:38:23	A	33.145	-106.518	35.134	-116.083	2000	5	19	EF	C7
5738	6/23/98	13:36:07	2	33.127	-106.432	33.545	-108.479	2000	5	19	EF	C7
5738	6/23/98	15:16:00	A	33.142	-106.500	42.887	-156.398	2000	4A	29	EF	C7
5738	6/23/98	16:34:00	2	33.142	-106.502	36.140	-120.409	2000	4A	29	EF	C7
5738	6/24/98	03:55:25	3	33.144	-106.492	29.022	-125.495	2000	52	19	EF	C7
5738	6/24/98	10:22:40	1	33.133	-106.469	33.431	-109.153	2000	0C	29	EF	C7
5738	6/25/98	10:12:54	1	33.168	-106.632	32.811	-105.063	2000	0	0	0	0
5738	6/26/98	10:02:39	3	33.148	-106.531	31.769	-99.998	2000	12	19	EF	C7
5738	6/26/98	11:40:24	B	33.131	-106.527	41.690	-147.887	2000	12	19	EF	C7
5738	6/26/98	12:32:54	B	33.159	-106.632	27.091	-76.667	2000	A9	29	EF	C7
5738	6/27/98	09:49:40	A	33.145	-106.519	30.556	-94.775	2000	69	37	EF	C7
5738	6/27/98	11:30:55	2	33.136	-106.494	40.708	-142.644	2000	69	37	EF	C7
5738	6/27/98	13:46:46	3	33.140	-106.489	34.734	-114.261	2000	BD	19	EF	C7
5738	6/28/98	11:20:31	A	33.140	-106.495	39.618	-137.248	2000	C6	37	EE	C7
5738	6/28/98	13:24:16	0	33.170	-106.598	32.565	-103.671	2000	9	37	EF	C7
5738	6/28/98	14:04:46	A	33.145	-106.507	27.625	-81.036	2000	C6	37	EF	C7
5738	6/28/98	15:05:31	1	33.145	-106.504	42.033	-151.661	2000	C6	37	EF	C7
5738	6/29/98	11:09:10	3	33.140	-106.497	38.519	-132.056	2000	DC	37	EF	C7
5738	6/29/98	13:06:10	B	33.168	-106.634	30.417	-92.979	2000	DC	37	EF	C7
5738	6/29/98	14:43:10	3	33.144	-106.499	40.071	-141.039	2000	F6	27	EF	C7
5738	6/29/98	15:26:40	A	33.139	-106.488	35.526	-118.346	2000	DC	37	EF	C7

5738	6/30/98	09:18:00	A	33.146	-106.521	27.227	-78.786	2000	3B	29	EF	C7
5738	6/30/98	10:57:00	3	33.140	-106.494	37.478	-126.716	2000	3B	29	EF	C7
5738	6/30/98	14:21:45	3	33.141	-106.499	37.962	-130.530	2000	3B	29	EF	C7
5738	6/30/98	15:03:00	2	33.120	-106.398	33.410	-107.813	2000	3B	29	EF	C7
5738	6/30/98	15:06:00	B	33.106	-106.505	27.117	-78.486	2000	3B	29	6F	C7
5738	6/30/98	16:40:15	B	33.143	-106.500	42.802	-155.491	2000	77	47	EF	C7
5738	6/30/98	16:47:00	3	33.141	-106.497	37.365	-126.435	2000	77	47	EF	C7
5738	7/1/98	10:46:33	3	33.137	-106.491	36.339	-121.400	2000	51	47	EF	C7
5738	7/1/98	12:21:48	B	33.145	-106.526	26.156	-72.183	2000	51	47	EF	C7
5738	7/1/98	14:00:48	3	33.138	-106.492	35.783	-120.024	2000	51	47	EF	C7
5738	7/1/98	14:42:48	B	33.122	-106.457	31.262	-97.075	2000	51	47	EF	C7
5738	7/1/98	16:18:28	B	33.170	-106.432	40.878	-144.990	2000	A0	27	EF	C7
5738	7/1/98	16:33:28	0	33.132	-106.497	36.149	-120.468	2000	51	47	EF	C7
5738	7/2/98	10:36:44	2	33.139	-106.481	35.040	-115.861	2000	DF	19	EF	C7
5738	7/3/98	10:24:33	2	33.134	-106.466	34.074	-110.853	2000	F2	29	EF	C7
5738	7/3/98	13:15:49	2	33.145	-106.524	31.575	-98.963	2000	D6	19	EF	C7
5738	7/4/98	10:13:01	1	33.176	-106.662	32.861	-105.263	2000	B9	37	EF	C7
5738	7/4/98	12:53:47	0	33.139	-106.527	29.355	-88.405	2000	1E	47	EF	C7
5738	7/4/98	14:33:32	3	33.141	-106.498	39.110	-136.282	2000	B9	37	EF	C7
5738	7/5/98	10:03:05	2	33.148	-106.534	31.767	-100.125	2000	99	37	EF	C7
5738	7/5/98	12:31:35	3	33.143	-106.511	27.063	-77.874	2000	99	37	EF	C7
5738	7/5/98	14:11:36	3	33.141	-106.496	37.024	-125.823	2000	39	27	EF	C7
5738	7/5/98	14:51:21	2	33.151	-106.544	0.358	-1.752	2000	39	27	EF	C7
5738	7/6/98	09:53:16	B	33.003	-106.707	30.385	-94.591	2000	8F	37	EF	C7
5738	7/6/98	11:33:45	B	33.078	-106.471	40.609	-142.888	2000	8F	37	EF	C7
5738	7/6/98	13:52:30	1	33.138	-106.487	34.924	-115.467	2000	8F	37	EF	C7
5738	7/6/98	14:27:16	B	33.144	-106.466	29.900	-92.012	2000	8F	37	EF	C7
5738	7/6/98	15:32:31	3	33.143	-106.514	29.676	-90.365	2000	8F	17	EF	C7
5738	7/6/98	16:07:46	A	33.142	-106.505	40.203	-140.491	2000	8F	37	EF	C7
5738	7/7/98	09:41:36	B	33.093	-106.576	29.424	-89.456	2000	66	37	EA	C7
5738	7/7/98	11:22:06	2	33.143	-106.499	39.581	-137.503	2000	76	27	EF	C7
5738	7/7/98	13:28:06	1	33.153	-106.566	32.786	-104.738	2000	76	27	EF	C7
5738	7/7/98	15:08:07	B	33.258	-106.479	42.256	-152.865	2000	76	27	EF	C7
5738	7/7/98	16:58:22	B	33.144	-106.315	38.648	-132.270	2000	76	27	EF	C7
5738	7/8/98	04:20:58	3	33.143	-106.497	26.479	-137.251	2000	9B	17	EF	C7
5738	7/8/98	09:28:28	3	33.143	-106.514	28.160	-84.220	2000	9B	17	EF	C7
5738	7/8/98	11:09:26	3	33.139	-106.496	38.590	-131.968	2000	33	37	EF	C7
5738	7/9/98	04:10:35	2	33.142	-106.499	27.714	-131.087	2000	0	0	0	0
5738	7/9/98	09:19:15	3	33.143	-106.512	27.193	-78.861	2000	50	19	EF	C7
5738	7/9/98	10:59:18	A	33.139	-106.494	37.554	-126.624	2000	1B	29	EF	C7
5738	7/10/98	09:04:45	B	33.135	-106.461	25.823	-73.201	2000	8D	27	EF	C7
5738	7/10/98	10:48:15	2	33.140	-106.493	36.342	-121.420	2000	8D	27	EF	C7
5738	7/10/98	12:18:47	A	33.139	-106.502	26.160	-73.687	2000	8D	27	EF	C7
5738	7/11/98	10:38:30	B	33.078	-106.309	35.202	-116.416	2000	7D	29	EF	C7
5738	7/11/98	13:38:45	A	33.137	-106.487	33.964	-110.605	2000	3C	49	EF	C7
5738	7/12/98	10:25:46	2	33.134	-106.468	34.076	-110.896	2000	F0	19	EF	C7
5738	7/12/98	13:18:16	1	33.146	-106.522	31.850	-100.099	2000	E2	19	EF	C7
5738	7/12/98	13:58:01	2	33.144	-106.511	26.948	-77.175	2000	E2	19	EF	C7
5738	7/13/98	14:35:48	3	33.140	-106.505	39.279	-137.429	2000	DB	29	EF	C7
5738	7/13/98	15:17:03	1	33.138	-106.494	34.733	-114.381	2000	DB	29	EF	C7
5738	7/13/98	15:45:33	3	33.144	-106.520	30.923	-96.190	2000	F8	29	EF	C7
5738	7/14/98	10:04:14	A	33.151	-106.532	31.831	-100.164	2000	F7	37	EF	C7
5738	7/14/98	12:32:44	B	33.098	-106.503	27.569	-78.985	2000	F7	37	EF	C7
5738	7/14/98	14:54:00	0	33.106	-106.305	32.650	-104.153	2000	F7	37	EF	C7
5738	7/14/98	15:31:46	2	33.144	-106.508	29.586	-90.308	2000	F7	37	EF	C7
5738	7/15/98	11:34:18	A	33.137	-106.494	40.589	-143.046	2000	DB	27	EF	C7
5738	7/15/98	13:52:18	3	33.139	-106.493	35.147	-116.555	2000	DB	27	EF	C7
5738	7/15/98	14:32:48	2	33.143	-106.510	30.437	-93.433	2000	DB	27	EF	C7
5738	7/15/98	16:10:34	A	33.137	-106.498	40.370	-141.460	2000	DB	27	EF	C7

5738	7/15/98	17:00:48	B	33.242	-106.456	38.630	-132.229	2000 87	39	EF	C7
5738	7/16/98	04:23:37	A	33.140	-106.495	26.369	-137.016	2000 0	0	0	0
5738	7/16/98	09:39:38	3	33.142	-106.514	29.443	-89.705	2000 D7	27	EF	C7
5738	7/16/98	11:23:30	A	33.142	-106.497	39.521	-137.712	2000 D7	27	EF	C7
5738	7/17/98	11:08:36	A	33.141	-106.502	38.733	-132.427	2000 4C	37	EF	C7
5738	7/17/98	13:04:26	B	33.143	-106.607	30.511	-94.964	2000 2D	47	EF	C7
5738	7/18/98	10:59:55	A	33.141	-106.496	37.451	-126.822	2000 21	37	EF	C7
5738	7/18/98	14:22:36	A	33.145	-106.499	38.597	-133.003	2000 E0	37	EF	C7
5738	7/19/98	10:47:21	A	33.139	-106.491	36.388	-121.571	2000 2A	27	EF	C7
5738	7/19/98	14:02:08	3	33.143	-106.498	36.382	-122.340	2000 83	37	EF	C7
5738	7/19/98	14:44:08	1	33.144	-106.514	31.629	-99.208	2000 2A	27	EF	C7
5738	7/20/98	10:37:57	2	33.138	-106.483	35.186	-116.218	2000 5	37	EF	C7
5738	7/20/98	13:40:56	1	33.142	-106.494	34.229	-111.668	2000 5	37	EF	C7
5738	7/20/98	14:20:41	3	33.146	-106.509	29.366	-88.909	2000 5	37	EF	C7
5738	7/20/98	15:57:13	3	33.149	-106.539	32.193	-102.148	2000 C9	27	EF	C7
5738	7/20/98	15:59:28	B	33.147	-106.498	39.364	-135.908	2000 C9	27	EF	C7
5738	7/21/98	10:25:55	1	33.133	-106.465	34.115	-111.027	2000 3A	29	EF	C7
5738	7/21/98	13:17:39	3	33.145	-106.529	0.102	-0.529	2000 3A	29	EF	C7
5738	7/21/98	15:38:34	3	33.140	-106.494	37.277	-126.127	2000 E5	47	EF	C7
5738	7/21/98	15:45:19	A	33.144	-106.524	30.865	-96.191	2000 E5	47	EF	C7
5738	7/22/98	10:15:16	0	33.193	-106.789	32.892	-105.385	2000 38	27	EF	C7
5738	7/23/98	10:03:01	2	33.145	-106.531	31.787	-100.368	2000 C3	37	EF	C7
5738	7/23/98	23:54:44	A	33.143	-106.517	38.321	-81.306	2000 6A	37	EF	C7
5738	7/24/98	01:32:58	3	33.143	-106.493	28.370	-129.377	2000 6A	37	EF	C7
5738	7/24/98	02:44:13	A	33.138	-106.515	36.953	-88.880	2000 6A	37	EF	C7
5738	7/24/98	13:51:02	2	33.144	-106.494	35.438	-117.629	2000 0	0	0	0
5738	7/24/98	14:33:19	1	33.142	-106.508	30.650	-94.312	2000 0	0	0	0
5738	7/24/98	16:48:17	3	33.143	-106.499	37.304	-125.979	2000 0	0	0	0
5738	7/25/98	01:11:03	3	33.144	-106.493	30.584	-118.926	2000 0E	19	EF	C7
5738	7/25/98	01:53:03	3	33.139	-106.521	-0.147	-0.970	2000 0E	19	EF	C7
5738	7/25/98	03:29:48	B	33.155	-106.530	25.399	-144.060	2000 0E	19	EF	C7
5738	7/25/98	14:13:50	B	33.175	-106.476	28.510	-83.992	2000 74	17	EF	C7
5738	7/25/98	15:51:20	A	33.140	-106.501	38.411	-131.905	2000 74	17	EF	C7
5738	7/26/98	15:30:07	1	33.143	-106.505	36.182	-121.195	2000 0	0	0	0
5738	7/26/98	16:24:15	3	33.138	-106.491	34.743	-113.998	2000 0	0	0	0
5738	7/26/98	20:55:47	2	33.136	-106.515	36.861	-89.273	2000 0	0	0	0
5738	7/27/98	02:06:42	B	33.181	-106.622	40.600	-70.951	2000 0	0	0	0
5738	7/27/98	02:45:51	A	33.146	-106.505	29.783	-122.970	2000 9C	27	EF	C7
5738	7/27/98	20:46:13	A	33.241	-106.207	38.010	-84.038	2000 D8	37	EF	C7
5738	7/27/98	22:24:44	3	33.143	-106.497	27.528	-131.977	2000 D8	37	EF	C7
5738	7/28/98	03:34:22	1	33.154	-106.456	31.753	-113.025	2000 0	0	0	0
5738	7/28/98	10:48:08	2	33.138	-106.492	36.408	-121.618	2000 C3	27	EF	C7
5738	7/29/98	10:37:10	3	33.137	-106.486	35.248	-116.310	2000 0	0	0	0
5738	7/30/98	10:26:38	1	33.133	-106.467	34.121	-110.982	2000 DE	19	EF	C7
5738	7/31/98	10:16:02	1	33.173	-106.651	32.918	-105.468	2000 66	37	EF	C7
5738	8/1/98	10:04:02	3	33.147	-106.530	31.803	-100.347	2000 BE	29	EF	C7
5738	8/1/98	12:35:07	B	33.111	-106.458	27.922	-81.264	2000 61	27	EF	C7
5738	8/1/98	14:15:37	3	33.143	-106.499	37.760	-129.152	2000 BE	29	EF	C7
5738	8/2/98	09:52:00	2	33.145	-106.520	30.673	-95.206	2000 56	19	EF	C7
5738	8/2/98	11:36:15	2	33.138	-106.498	40.639	-143.060	2000 56	19	EF	C7
5738	8/2/98	12:13:00	A	33.145	-106.508	25.594	-71.027	2000 56	19	EF	C7
5738	8/2/98	14:35:11	3	33.145	-106.517	30.823	-95.554	2000 56	19	EF	C7
5738	8/2/98	14:54:41	B	33.167	-106.510	25.635	-71.548	2000 56	19	EF	C7
5738	8/3/98	01:56:15	2	33.134	-106.525	35.077	-97.265	2000 D8	19	EF	C7
5738	8/3/98	02:21:00	B	33.137	-106.345	39.237	-77.532	2000 D8	19	EF	C7
5738	8/3/98	04:00:45	A	33.141	-106.493	29.085	-124.561	2000 D8	19	EF	C7
5738	8/3/98	09:40:30	B	33.159	-106.237	29.278	-89.479	2000 D8	19	EF	C7
5738	8/3/98	15:54:49	B	33.169	-106.486	38.364	-132.644	2000 0	0	0	0
5738	8/3/98	16:23:44	2	33.138	-106.481	34.725	-113.841	2000 0	0	0	0

5738	8/3/98 21:07:53	3	33.139	-106.519	35.689	-94.741	2000 0	1	8	1
5738	8/4/98 03:13:21	1	33.141	-106.471	27.145	-134.659	2000 0	0	0	0
5738	8/4/98 03:48:13	2	33.143	-106.488	30.462	-118.703	2000 8	8	0	0
5738	8/4/98 09:29:27	A	33.144	-106.514	28.343	-84.691	2000 0	0	0	0
5738	8/4/98 15:33:28	A	33.132	-106.478	36.398	-122.220	2000 0	0	0	0
5738	8/4/98 16:11:18	0	33.141	-106.487	33.420	-107.778	2000 0	0	0	0
5738	8/4/98 20:56:50	3	33.137	-106.516	36.838	-89.392	2000 0	0	0	0
5738	8/4/98 22:34:24	2	33.150	-106.488	26.539	-137.413	2000 EB	37	EF	C7
5738	8/5/98 10:59:52	3	33.140	-106.496	37.579	-127.068	2000 0	0	0	0
5738	8/5/98 17:39:38	B	33.357	-106.329	42.291	-149.913	2000 35	39	EF	C7
5738	8/5/98 20:44:52	2	33.140	-106.510	37.938	-84.129	2000 35	39	EF	C7
5738	8/5/98 22:25:54	B	33.124	-106.459	27.565	-132.304	2000 35	39	EF	C7
5738	8/6/98 00:07:54	2	33.131	-106.510	36.900	-88.371	2000 35	39	EF	C7
5738	8/6/98 09:07:21	B	33.026	-106.060	25.876	-73.721	2000 0	0	0	0
5738	8/6/98 10:49:42	A	33.139	-106.494	36.444	-121.740	2000 0	0	0	0
5738	8/6/98 20:34:00	B	33.075	-106.169	38.736	-79.158	2000 DA	29	EF	C7
5738	8/6/98 22:12:15	A	33.145	-106.498	28.857	-126.700	2000 DA	29	EF	C7
5738	8/6/98 23:44:33	A	33.137	-106.509	39.015	-78.026	2000 F2	29	EF	C7
5738	8/7/98 10:37:46	3	33.138	-106.490	35.280	-116.394	2000 0D	37	EF	C7
5738	8/7/98 13:43:19	2	33.141	-106.489	34.705	-113.994	2000 0D	37	EF	C7
5738	8/8/98 13:20:09	0	33.152	-106.534	32.521	-103.491	2000 0	0	0	0
5738	8/8/98 14:01:41	A	33.145	-106.516	27.589	-80.633	2000 0	0	0	0
5738	8/9/98 10:14:52	0	33.172	-106.649	32.975	-105.734	2000 0	0	0	0
5738	8/9/98 12:57:18	A	33.143	-106.509	30.404	-93.239	2000 0	0	0	0
5738	8/9/98 14:38:59	2	33.143	-106.505	40.108	-140.864	2000 0	0	0	0
5738	8/10/98 02:33:22	0	33.122	-106.555	38.297	-82.619	2000 0	0	0	0
5738	8/10/98 02:40:47	A	33.163	-106.479	30.509	-119.342	2000 0	0	0	0
5738	8/10/98 04:12:45	3	33.143	-106.493	27.864	-130.588	2000 0	0	0	0
5738	8/10/98 10:05:07	3	33.147	-106.530	31.808	-100.362	2000 0	0	0	0
5738	8/10/98 15:00:10	0	33.081	-106.226	33.311	-107.331	2000 0	0	0	0
5738	8/10/98 16:35:51	2	33.136	-106.494	36.031	-119.839	2000 0	0	0	0
5738	8/10/98 19:48:40	B	33.121	-106.497	43.113	-57.239	2000 0	0	0	0
5738	8/10/98 21:29:33	0	33.108	-106.663	33.391	-105.345	2000 6D	19	EF	C7
5738	8/11/98 03:58:01	1	33.155	-106.495	29.325	-124.527	2000 0C	19	EF	C7
5738	8/11/98 11:34:03	A	33.144	-106.495	40.977	-143.210	2000 0C	19	EF	C7
5738	8/11/98 21:19:37	1	33.134	-106.535	34.531	-100.081	2000 5F	27	EF	C7
5738	8/11/98 23:36:39	B	33.111	-106.597	39.878	-73.774	2000 25	35	EF	C7
5738	8/12/98 09:42:25	2	33.143	-106.516	29.470	-89.801	2000 0	0	0	0
5738	8/12/98 11:23:40	2	33.139	-106.497	39.775	-137.649	2000 24	25	EF	C7
5738	8/12/98 21:08:26	3	33.138	-106.519	35.682	-94.752	2000 10	35	EF	C7
5738	8/12/98 22:45:11	B	33.151	-106.513	25.418	-142.738	2000 10	35	EF	C7
5738	8/13/98 00:52:44	1	33.149	-106.460	32.300	-110.560	2000 10	35	EF	C7
5738	8/13/98 01:35:29	3	33.139	-106.515	37.044	-87.848	2000 5F	29	EF	C7
5738	8/13/98 11:13:20	3	33.140	-106.497	38.603	-132.229	2000 0	0	0	0
5738	8/13/98 13:11:20	3	33.146	-106.521	31.534	-98.702	2000 10	0	0	0
5738	8/13/98 13:54:21	A	33.146	-106.511	26.586	-75.532	2000 0	4	A5	29
5738	8/13/98 20:56:31	3	33.139	-106.515	36.795	-89.447	2000 23	49	EF	C7
5738	8/13/98 22:34:46	A	33.139	-106.492	26.580	-137.379	2000 23	49	EF	C7
5738	8/14/98 00:28:45	2	33.136	-106.535	34.445	-100.031	2000 23	49	EF	C7
5738	8/14/98 01:14:16	B	33.137	-106.550	39.054	-77.442	2000 A6	29	EF	C7
5738	8/14/98 11:02:54	3	33.140	-106.495	37.458	-126.964	2000 D3	19	EF	C7
5738	8/14/98 12:50:54	A	33.141	-106.513	29.475	-88.175	2000 D3	19	EF	C7
5738	8/14/98 14:29:31	A	33.143	-106.507	39.171	-135.895	2000 C5	37	EF	C8
5738	8/14/98 15:10:45	3	33.136	-106.484	34.487	-112.914	2000 C5	37	EF	C8
5738	8/14/98 20:46:11	A	33.143	-106.523	37.989	-83.993	2000 2C	37	EF	C7
5738	8/15/98 00:06:25	B	33.016	-106.650	36.484	-89.318	2000 2C	37	EF	C7
5738	8/15/98 02:28:19	2	33.149	-106.488	31.519	-114.491	2000 0	0	0	0
5738	8/15/98 03:11:16	2	33.135	-106.529	34.458	-100.448	2000 0	0	0	0
5738	8/15/98 10:53:32	A	33.142	-106.495	36.313	-121.802	2000 59	19	EF	C7

5738	8/15/98 17:15:56	1	33.152	-106.525	39.679	-137.467	2000	0	0	0	0
5738	8/15/98 22:12:17	1	33.148	-106.497	28.853	-126.754	2000	0	0	0	0
5738	8/15/98 23:47:13	A	33.140	-106.506	38.795	-78.890	2000	0	0	0	0
5738	8/16/98 01:25:12	1	33.145	-106.488	28.933	-126.951	2000	0	0	0	0
5738	8/16/98 10:39:47	3	33.138	-106.487	35.257	-116.360	2000	F6	37	EF	C7
5738	8/16/98 13:45:17	3	33.140	-106.487	34.871	-115.038	2000	2B	39	EF	C7
5738	8/16/98 14:27:17	A	33.150	-106.527	30.063	-91.963	2000	2B	39	EF	C7
5738	8/17/98 01:05:18	2	33.143	-106.485	31.092	-116.308	2000	0	0	0	0
5738	8/17/98 01:46:51	1	33.136	-106.527	35.806	-93.581	2000	8B	37	EF	C7
5738	8/17/98 02:47:36	A	33.138	-106.509	37.075	-88.264	2000	8B	37	EF	C7
5738	8/17/98 03:24:21	B	33.204	-106.759	26.102	-141.144	2000	8B	37	EF	C7
5738	8/17/98 04:24:21	B	33.253	-106.654	26.888	-136.306	2000	8B	37	EF	C7
5738	8/17/98 15:46:58	3	33.141	-106.498	37.752	-128.972	2000	0	0	0	0
5738	8/17/98 16:50:00	2	33.142	-106.501	37.206	-125.489	2000	0	0	0	0
5738	8/17/98 21:48:14	B	33.356	-106.026	31.143	-116.958	2000	0	0	0	0
5738	8/18/98 02:34:23	B	33.145	-106.402	38.182	-82.920	2000	0	0	0	0
5738	8/18/98 03:04:03	0	33.136	-106.472	28.073	-130.846	2000	0	7	F8	3
5738	8/19/98 02:41:34	A	33.144	-106.493	30.328	-120.258	2000	0	0	0	0
5738	8/19/98 02:41:34	A	33.144	-106.493	30.328	-120.258	2000	0	0	0	0
5738	8/19/98 03:58:25	2	33.146	-106.493	29.342	-124.380	2000	0	0	0	0
5738	8/19/98 03:58:25	2	33.146	-106.493	29.342	-124.380	2000	0	0	0	0
5738	8/19/98 10:06:22	3	33.147	-106.533	31.815	-100.372	2000	0	0	0	0
5738	8/19/98 10:06:22	3	33.147	-106.533	31.815	-100.372	2000	0	0	0	0
5738	8/20/98 03:49:14	3	33.143	-106.489	30.547	-118.316	2000	0	0	0	0
5738	8/20/98 03:49:14	3	33.143	-106.489	30.547	-118.316	2000	0	0	0	0
5738	8/20/98 13:57:43	A	33.146	-106.501	36.075	-120.818	2000	0	0	0	0
5738	8/20/98 13:57:43	A	33.146	-106.501	36.075	-120.818	2000	0	0	0	0
5738	8/20/98 16:13:10	1	33.119	-106.398	33.374	-107.567	2000	0	0	0	0
5738	8/20/98 16:13:10	1	33.119	-106.398	33.374	-107.567	2000	0	0	0	0
5738	8/20/98 21:18:49	2	33.137	-106.531	34.503	-100.157	2000	0	0	0	0
5738	8/20/98 21:18:49	2	33.137	-106.531	34.503	-100.157	2000	0	0	0	0
5738	8/21/98 03:34:53	B	33.225	-106.659	32.026	-112.261	2000	0	0	0	0
5738	8/21/98 16:01:24	B	33.128	-106.555	32.048	-101.498	2000	0	0	0	0